ALESIS
ION (Q01)
Service Manual

P/N: 8-31-0125-A

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Preface

This document is intended to assist the service technician in the operation, maintenance and repair of the Alesis device. Together with the User Reference Manual, this document provides a complete description of the functionality and serviceability of the Device. Any comments or suggestions you may have pertaining to the document are welcome and encouraged.

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Warnings

TO REDUCE THE RISK OF ELECTRIC SHOCK OR FIRE, DO NOT EXPOSE THIS PRODUCT TO WATER OR MOISTURE.

The arrowhead symbol on a lightning flash inside a triangle is intended to alert the user to the presence of un-insulated "dangerous voltage" within the enclosed product which may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point inside a triangle is intended to alert the user to the presence of important operating, maintenance and servicing instructions in the literature which accompanies the product.

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Regarding the Power Supply Fuse

CAUTION: The product under service may employ the use of a replaceable fuse. Danger of fire or electrocution if fuse is incorrectly replaced. Replace with only the same type or equivalent type recommended by the equipment manufacturer.

Safety Suggestions

Carefully read the applicable items of the operating instructions and these safety suggestions before using this product. Use extra care to follow the warnings written on the product itself and in the operating instructions. Keep the operating instructions and safety suggestions for reference in the future.

1. Power Source. The product should only be connected to a power supply which is described either in the operating instructions or in markings on the product.

2. Power Cord Protection. AC power supply cords should be placed such that no one is likely to step on the cords and such that nothing will be placed on or against them.

3. Periods of Non-use. If the product is not used for any significant period of time, the product's AC power supply cord should be unplugged from the AC outlet.

4. Foreign Objects and Liquids. Take care not to allow liquids to spill or objects to fall into any openings of the product.

5. Water or Moisture. The product should not be used near any water or in moisture.

6. Heat. Do not place the product near heat sources such as stoves, heat registers, radiators or other heat producing equipment.

7. Ventilation. When installing the product, make sure that the product has adequate ventilation. Improperly ventilating the product may cause overheating, which may damage the product.

8. Mounting. The product should only be used with a rack which the manufacturer recommends. The combination of the product and rack should be moved carefully. Quick movements, excessive force or uneven surfaces may overturn the combination which may damage the product and rack combination.

9. Cleaning. The product should only be cleaned as the manufacturer recommends.

10. Service. The user should only attempt the limited service or upkeep specifically described in the operating instructions for the user. For any other service required, the product should be taken to an authorized service center as described in the operating instructions.

11. Damage to the Product. Qualified service personnel should service the unit in certain situations including without limitation when:
    a. Liquid has spilled or objects have fallen into the product,
    b. The product is exposed to water or excessive moisture,
    c. The AC power supply plug or cord is damaged,
    d. The product shows an inappropriate change in performance or does not operate normally, or
    e. The enclosure of the product has been damaged.

Specifications

Sound Engine

Sound Generation: Alesis proprietary DSP Analog Modeling
Polyphonic Voices: 8, each with 3 oscillators, 2 multi-mode filters, 3 envelope generators, 2 LFOs, programmable effects send and modulation matrix.
Program Memory: 512 Preset Programs, 32 Multi-timbral Setups, all user-rewritable
Effects: 4 Drive Effects (1 each per Part) plus Master Effects (Shared)

Audio Input

Input Connectors: 2 Balanced 1/4” TRS jacks
Maximum Input Level: +5.2dBu (1.41VRMS) = -0dBFS
Input Impedance: 10kΩ

Audio Output

Output Connectors: 4 Impedance-Balanced 1/4” TRS jacks, ¼” TRS Headphone Jack
Maximum Output Level: +18dBu (6.17 VRMS) = -0dBFS
Output Impedance: 1kΩ

Audio Performance

Signal To Noise Ratio: >95 dB A-weighted, Ext In to Main or Aux Out
THD+N: < 0.005%, External In to Main or Aux Out
Frequency Response: 20-20kHz,External In to Main or Aux Out
Power Consumption: 12 Watts max (100-240VAC/50-60Hz)

Physical

Keyboard: 49 keys (velocity, release velocity sensitive)
Real-Time Controllers: 30 360-degree Parameter Knobs, 2 Assignable Modulation Wheels, Assignable Pitch Wheel,
Pedal Jacks: Assignable Exp pedal jack, Sustain pedal jack
MIDI Connections: MIDI In, MIDI Out, MIDI Thru
Audio Outputs: Main L/R , Aux L/R, Headphone (1/4” TRS)
Dimensions (WxHxD): 33.0” x 3.75” x 13.0” / 838.20 x 95.25 x 330.20mm
Weight: 20 lbs / 9 kg

DISASSEMBLY PROCEDURES

1. REMOVAL OF TOP COVER / FRONT BOTTOM PANEL (Fig.1)
   (A) TAKE OUT THE 5 PCS SCREWS FROM WHICH
   THE REAR PANEL.
   (B) TAKE OUT THE 12 PCS SCREWS FROM WHICH
   THE BOTTOM PANEL

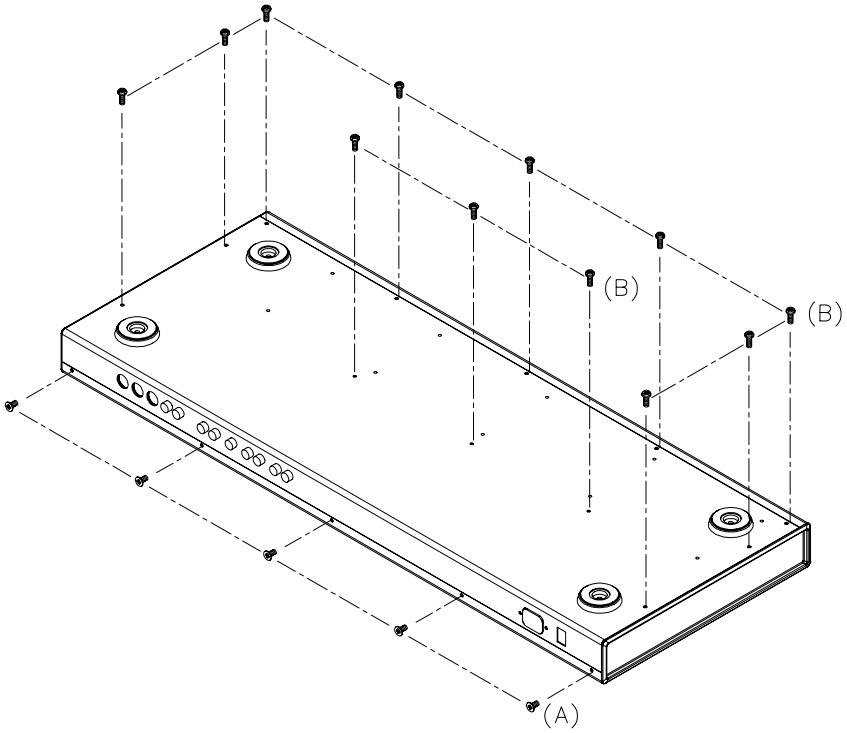


Fig.1

2. REMOVAL OF KEYBOARD (Fig.2)
   (A) TAKE OUT THE 10PCS SCREWS FROM WHICH
   THE BOTTOM CHASSIS.

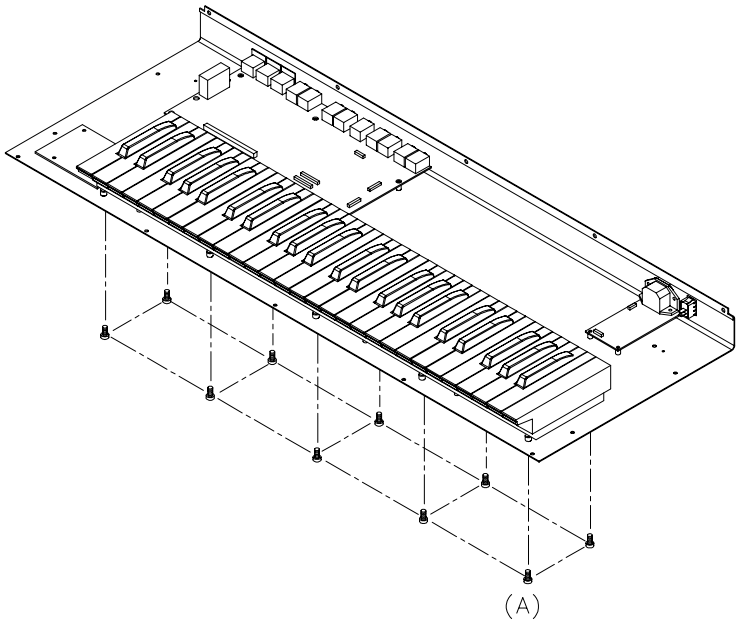


Fig.2

3. REMOVAL OF MAIN P.C.B AND ASSY PCB PITCH/MOD WHEEL LED (Fig.3)

(A) REMOVE 6 PCS OF CABLE CONNECTOR FROM MAIN PCB
(B) REMOVE THE 9 PCS NUT OF 1/4" CONNECTORS FROM REAR PANEL
(C) REMOVE THE 5 PCS SCREW FROM WHICH MAIN PCB
(D) REMOVE 1 PC OF CABLE CONNECTOR FROM PCB PITCH/MOD WHEEL LED
(E) REMOVE 4 PCS OF SCREW FROM PCB PITCH/MOD WHEEL LED

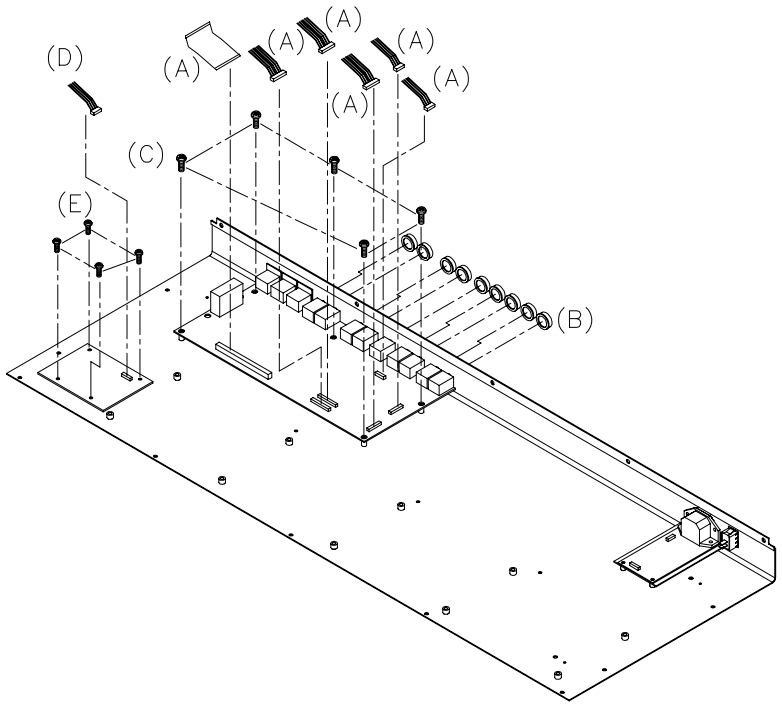


Fig.3

4.REMOVAL ASSY PCB POWER SUPPLY BB01 (Fig.4)

(A) REMOVE 1 PC OF CABLE CONNECTOR FROM PCB TRANSFORMER
(B) REMOVE THE 2 PCS SCREWS FROM PCB TRANSFORMER
(C) REMOVE THE 2 PCS SCREWS FROM REAR PANEL

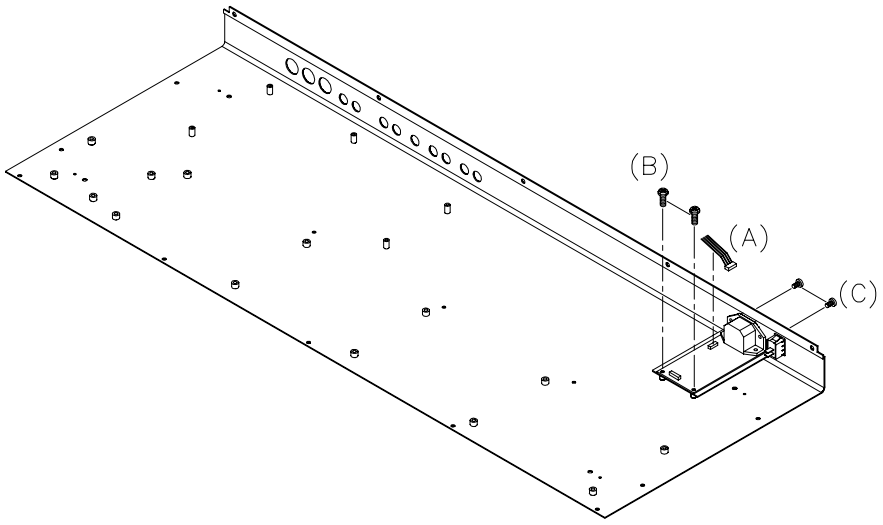


Fig.4

5.REMOVAL ASSY PCB TOP PANEL AND ASSY PITCH AND MOD WHEELS (Fig.5)

(A) REMOVE THE 9 PCS OF SCREWS FROM ASSY PCB TOP PANEL LEFT
(B) REMOVE THE 7 PCS SCREW FROM ASSY PCB TOP PANEL RIGHT
(C) REMOVE THE 6PCS SCREW FROM ASSY PITCH AND MOD WHEELS
(D) REMOVE THE 4PCS SCREW FROM ASSY LCD WITH CABLE

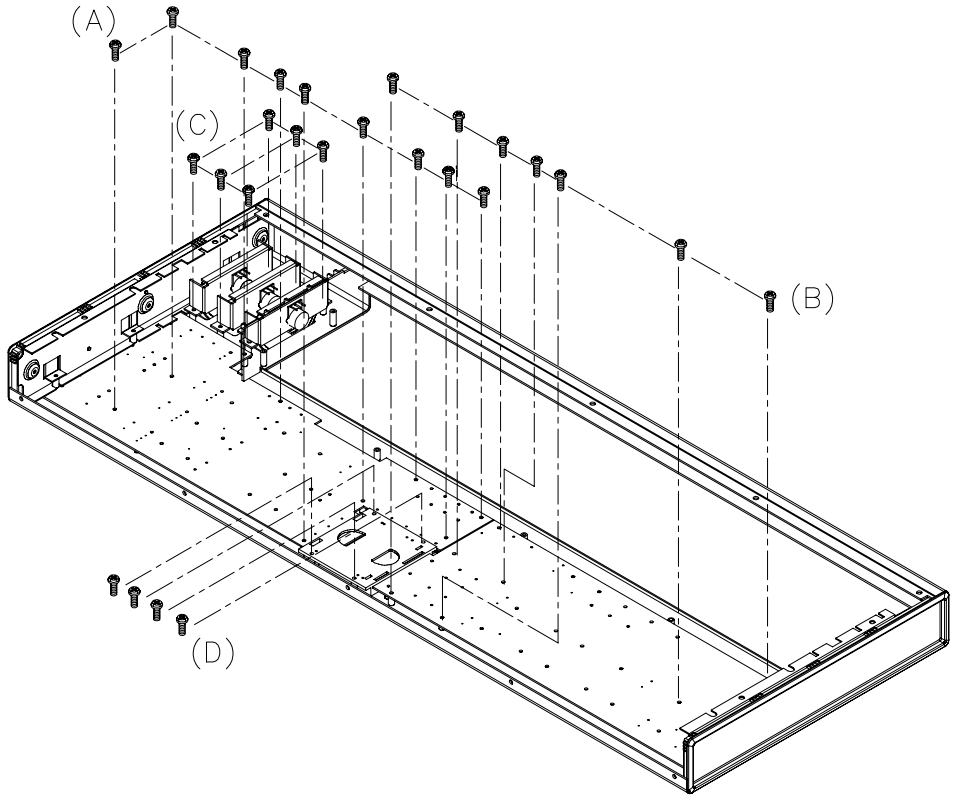
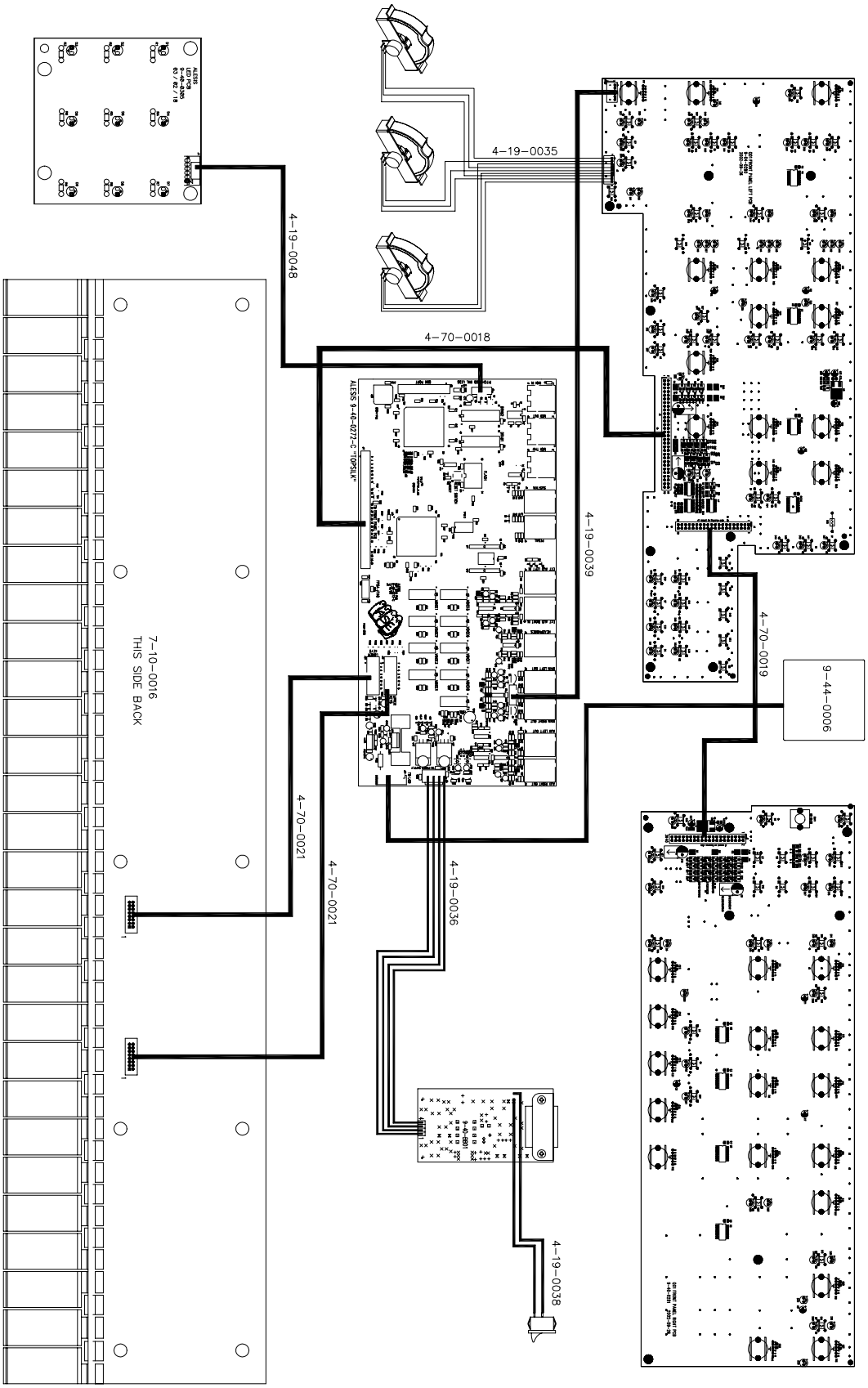
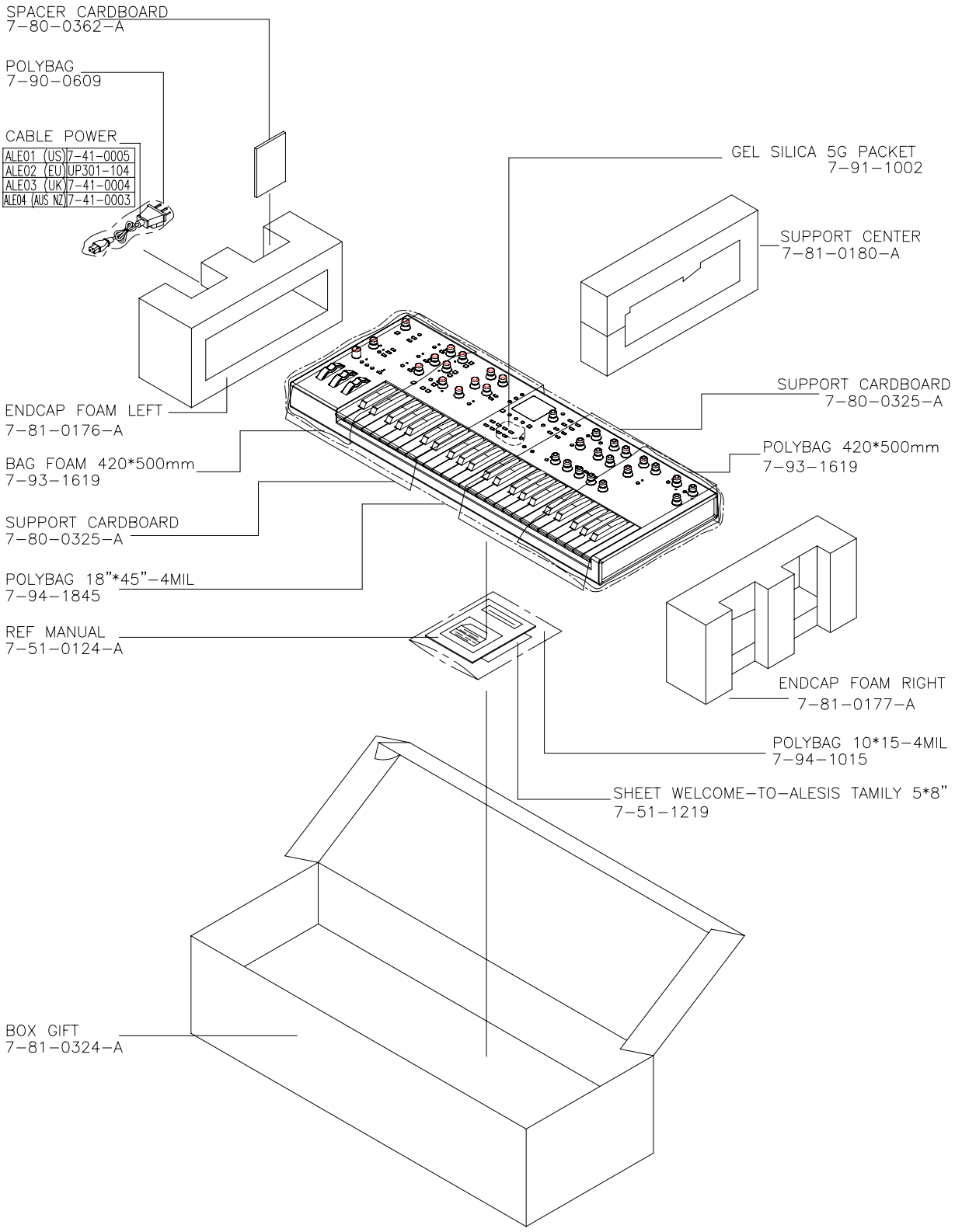


Fig.5

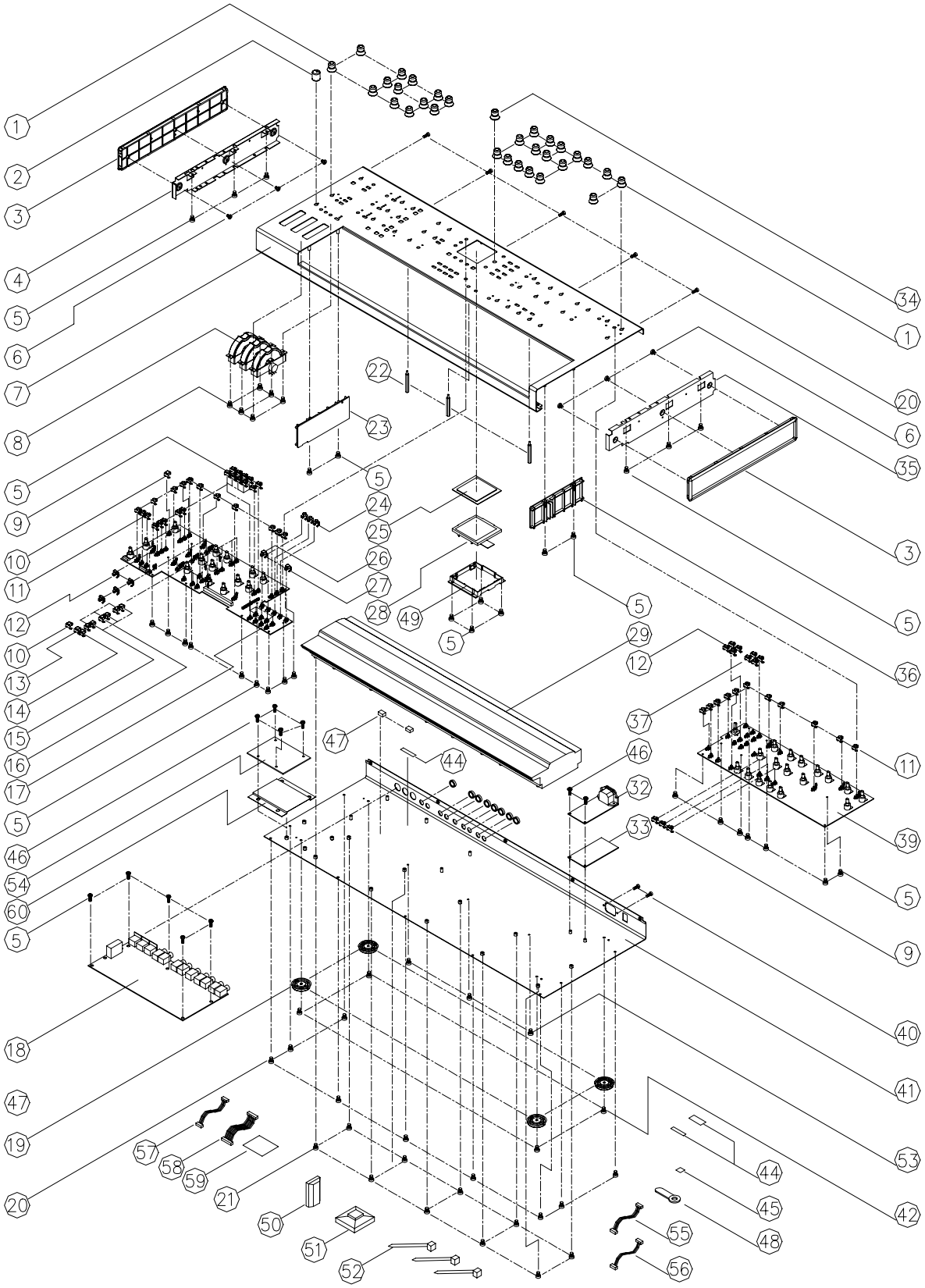
WIRING DIAGRAM
(US/EU/UK/AUS NZ)



PACKING DIAGRAM
(US/EU/UK/AUS NZ)



EXPLODE DIAGRAM
(US/EU/UK/AUS NZ)



SEQUENCIAL NO OF EXPLODE DIAGRAM WILL BE MARKED ON REF. COLUMM OF BOM LIST

ALESIS
ION (Q01)

BOM

Ion BOM

LEVEL	P/N	DESCRIPTION	QTY	REF
1	BAGL-40A	CABLE CLIP	1	48
1	5-10-1004	TIE WRAP 4" LOCKING WHITE	3	52
1	LAP67YAH255	STICKER	5	
1	5-03-0035	STANDOFF M3 M-F 45.2mm BRASS	3	22
1	9-01-0077-A	SUBPANEL ENDCAP LEFT Q01	1	4
1	9-01-0076-A	SUBPANEL ENDCAP RIGHT Q01	1	35
1	PQ01ALE01	PACKING ASSEMBLY	1	
2	7-80-0362-A	SPACER CARDBOARD [CB310N005] Q01	1	
2	7-90-0609	POLYBAG	0.007	
2	7-93-1619	BAG FOAM 420 X 500mm	2	
2	7-51-0124-A	REF MANUAL, Q01	1	
2	7-51-1219	SHEET WELCOME-TO-ALESIS-FAMILY 5 x 8"	1	
2	7-80-0323-A	BOX SHIPPING Q01	1	
2	7-80-0324-A	BOX GIFT Q01	1	
2	7-80-0325-A	SUPPORT CARDBOARD Q01	2	
2	7-81-0176-A	ENDCAP FOAM LEFT Q01	1	
2	7-81-0177-A	ENDCAP FOAM RIGHT Q01	1	
2	7-81-0180-A	SUPPORT CENTER FOAM Q01	1	
2	7-91-1002	GEL SILICA 5G PACKET	1	
2	7-94-1015	POLYBAG 10 * 15 - 4 MIL	0.1	
2	7-94-1845	POLYBAG 18" X 45" 4MIL	0.1	
1	PT0104432	WIRING SEAT	1	51
1	9-15-0305-A	ENDCAP CHASSIS LEFT Q01	2	3
1	7-07-0060-A	INSULATOR POWER SUPPLY FORMEX W/ ADHESIVE 102 X 72 mm	1	33
1	7-07-0062	INSULATOR SHEET PLASTIC	1	60
1	9-15-0310-A	CAP ROUND SWITCH CLEAR Q01	25	11
1	9-15-0311-A	CAP ROUND SWITCH BLACK Q01	3	24
1	9-15-0312-A	CAP SQUARE SWITCH CLEAR Q01	2	10
1	9-15-0313-A	CAP SQUARE SWITCH CLEAR ARROW UP Q01	3	15
1	9-15-0352-A	CAP SQUARE SWITCH CLEAR ARROW DOWN Q01	3	16
1	9-15-0351-A	CAP SQUARE SWITCH CLEAR ARROW LEFT Q01	1	13
1	9-15-0350-A	CAP SQUARE SWITCH CLEAR ARROW RIGHT Q01	1	14
1	9-15-0371-A	CAP SQUARE SWITCH BLACK ARROW LEFT FACING Q01	1	26
1	9-15-0370-A	CAP SQUARE SWITCH BLACK ARROW RIGHT FACING Q01	1	27
1	9-15-0315-A	CAP RECTANGULAR SWITCH CLEAR Q01	18	9
1	9-15-0316-A	CAP RECTANGULAR SWITCH BLACK Q01	8	12
1	9-15-0361-A	CAP RECTANGULAR SWITCH CLEAR CENTER Q01	4	37
1	5-03-0034	STANDOFF 10 X 10 X 8.8 mm NEOPRENE RUBBER	2	47
1	SC0306PBBI	SCREW	6	6
1	SC0306RICI	SCREW	6	46
1	SC0406RIBI	SCREW	4	42
1	SC3506AIBI	SCREW	14	20
1	SC3514PBBI	SCREW	10	21
1	4-19-0036-A	CABLE SIL 4-PIN CONNECTOR F-F	1	56
1	4-19-0039-A	CABLE SIL 6-PIN 2mm F-F	1	57
1	4-19-0048-A	CABLE SIL 6-PIN 2mm M - STAKED	1	55
1	4-70-0021-A	CABLE DIL RIBBON 16-PIN F-M	2	
1	5-00-0020	SCREW	3	53
1	5-00-0106	SCREW	41	5
1	5-00-1020	SCREW	2	40
1	7-10-0116	ASSY KEYBED 49-KEY FATAR TP/7BA	1	29
1	7-41-0005	CABLE POWER UL/CSA (SJT)	1	
1	7-50-0179	STICKER BARCODE S/N Q01	1	44
1	7-52-0040-B	STICKER ETL/FCC/CE/C-Tick & CAUTION - REV B	1	59
1	7-53-0100	STICKER SYMBOL CAUTION (WHITE-ON-BLACK)	1	45
1	9-01-0056-A	TOP PANEL Q01	1	7
1	9-01-0057-A	CHASSIS BOTTOM Q01	1	41
1	9-10-0058-A	BEZEL LCD CLEAR ACRYLIC Q01 - REV A	1	25

1	9-15-0076	FOOT ROUND LARGE	4	19
1	9-15-0206	CLIP	1	50
1	9-15-0302-A	KNOB TEXTURED TRANSLUCENT Q01 - REV A	1	34
1	9-15-0303-A	KNOB TEXTURED BLACK Q01 - REV A	30	1
1	9-15-0304-A	KNOB MAIN VOLUME W/INDICATOR Q01 - REV A	1	2
1	9-15-0307-A	ENDCAP KEYBED LEFT Q01 - REV A	1	23
1	9-15-0308-A	ENDCAP KEYBED RIGHT Q01 - REV A	1	36
1	9-15-0309-A	BRACKET MOUNTING LCD FRONTIGHT	1	49
1	9-44-0006	DISPLAY LCD 160x160 HANTRONIX Y-G LED BACKLIGHT	1	28
1	**9-79-BB01**	**ASSY PCB POWER SUPPLY BB01**	**1**	**32**
2	7-53-0231-A	STICKER FUSE RATING T1AL 250V	1	(C3)
2	9-07-0031	SHIELD EMI/IEC BB	1	(J2)
2	5-04-0062-A	INSULATOR 19mm x 20mm PLASTIC	1	(C11)
2	TE617920201	2P AC CONNECTOR	1	(J3)
2	0-00-0221	RES 220 OHM 1/8W 5%	1	R1
2	0-00-0689	RES 6.8 OHM 1/8W 5%	1	R2
2	0-01-2213	RES 221K OHM 1/8W 1%	2	R3,4
2	0-05-1104	RES 100K OHM 1W 5%	1	R5
2	1-02-0104	CAP 0.1uF CERDISC 10% .30"DIA.	1	C1
2	1-02-5103	CAP 0.01uF CERDISC 20% 500V 5x5x2mm	1	C6
2	1-08-0474	CAP 47uF ELEC 16V 2x5x11mm	1	C5
2	1-08-1000	CAP 1000uF ELEC 20% 16V 5x10.2x20mm	2	C7,9
2	1-09-0221	CAP 220uF ELEC 25V 3.5x8x12.5mm	4	C2,4,10,12
2	1-13-4472	CAP 47uF ELEC 400V 7.5x18x25mm	1	C11
2	1-14-0104	CAP 0.1uF X2-CAP +/-20% 250VAC 15x17.5x5x10.5mm	2	C3,8
2	1-15-0103	CAP 0.01uF Y-CAP 250 VAC 15.2X18.5X5.2X10.5mm	2	C14,15
2	1-15-2102	CAP 1000pF Y-CAP 250VAC 5x6.5x4.5mm	1	C13
2	2-01-0120	DIODE POWER ULTRA-FAST MUR120 1A 200V	2	D2,6
2	2-01-5822	DIODE SCHOTTKY 1N5822 3A 40V	1	D3
2	2-02-0600	DIODE POWER ULTRAFAST MUR160 600V 1A	1	D4
2	2-02-4751	DIODE ZENER 1N4751 30V 1W DO-41	1	D5
2	2-03-0105	RECTIFIER BRIDGE DB105 1A 600V	1	D7
2	2-05-0223	TRANS OFF-LINE PWM SWITCH 50W TO-223	1	Q2
2	2-24-8104	IC OPTO-ISOLATOR TCDT1124 6-PIN	1	Q1
2	2-99-0021	DIODE BAV21	1	D1
2	4-09-0010	CON PWR IEC 10A 250V PCB-MOUNT (TOP GND LUG)	1	J2
2	4-15-0204	HEADER SIL 4-PIN	1	J1
2	5-05-1001	CLIP FUSE HOLDER (5 x 12mm)	2	F1
2	7-04-0012	FUSE 2A 250V 5X20mm F UL-LISTED	1	(F1)
2	7-20-0064	INDUCTOR 100uH 0.58A 5x8.5x11.5mm 20%	1	L1,4
2	7-20-0065	INDUCTOR 22uH 1.29A 5x8.5x11.5mm 20%	1	L2
2	7-30-0025	CHOKE COMMON MODE 10mH 3.5 OHMS	1	L3
2	7-40-0038	TRANSFORMER HI-FREQ SWITCHING FLYBACK EI25-CORE BB	1	T1
2	9-40-BB01-E	PCB POWER SUPPLY BB01- REV E	1	
1	**9-79-0272-C**	**ASSY PCB MAIN Q01 Rev C**	**1**	**18**
2	CS103K5005X7R	CERAMIC 0.01UF	74	C2~14,18,21,73~92,94~109,114~116,118,121,122,127 ,128,130~141,143,144,150
2	CS104K2505X7R	CERAMIC 0.1UF	17	C1,24,29~31,35,40,58,70,71,93,110,111,112,123~125
2	5-04-0061-A	INSULATOR 4.1mm x 18mm PLASTIC	1	(J3)
2	RS10118J05	RESISTOR 100O (SMD)	6	R96,97,100,101,105,106
2	RS10218J05	RESISTOR 1K (SMD)	27	R10,11,15,27,34,39,40~42,44~46,50,51,63,65,74,76,77,86,108,113,114,120~122,140
2	RS10318J05	RESISTOR 10K (SMD)	18	R4,7~9,13,14,18,31~33,52,90,91,104,112,131,133,139
2	RS10418J05	RESISTOR 100K (SMD)	13	R12,16,17,23~26,28~30,43,61,62
2	RS18218J05	RESISTOR 1.8K (SMD)	4	R19,20,36,37
2	RS20318J05	RESISTOR 20K (SMD)	8	R53,54,58,59,70,78,79,84

2	RS24218J05	RESISTOR 2.4K (SMD)	1	R136
2	RS30218J05	RESISTOR 3K (SMD)	11	R55~57,60,64,67,69,75,80,82,85
2	R10218	RESISTOR 1KO	1	R141
2	TE10200601	6P CONNECTOR	2	(J2,12)
2	5-01-0029	WASHER	1	(U37)
2	WS663309IC	WASHER	3	(U31,32,37)
2	0-05-0100	RES 10 OHM 1/2W 5%	1	R138
2	0-15-0912	RES 9.1K OHM 1/10W 5% 0805	8	R48,49,66,68,71,72,81,83
2	0-16-2210	RES 221 OHM 1/10W 1% 0805	16	R1,5,21,22,35,38,47,73,87,92,98,99,102,103,135,137
2	0-16-3650	RES 365 OHM 1/10W 1% 0805	1	R134
2	0-17-0102	RES CHIP ARRAY 4 x 1K OHM 1/16W 5% ISOLATED c-c=0.8mm	5	R2,109,111,115,117
2	0-17-0103	RES CHIP ARRAY 4 x 10K OHM 1/16W 5% ISOLATED c-c=0.8mm	7	R88,89,107,110,124,126,132
2	0-17-0221	RES CHIP ARRAY 4 X 220 OHM 1/16W 5% ISOLATED c-c=0.8mm	10	R6,116,118,119,123,125,127~130
2	0-17-0470	RES CHIP ARRAY 4 X 47 OHM 1/16W 5% ISOLATED c-c=0.8mm	3	R93-95
2	1-08-0222	CAP 22uF ELEC 20% 16V 1.5x4x7mm	25	C19,20,25,28,32,36,37,41~44,54~57,67~69,117,119,120,126,129,145,146
2	1-08-0223	CAP 220 uF 16V ELEC	1	C113
2	1-11-0225	CAP 2.2uF ELEC 50V	5	C72,142,147~149
2	1-55-0561	CAP 560pF NPO 0805	20	C15~17,22,23,26,27,33,34,38,39,49,50~53,59~61,64
2	1-56-0151	CAP 150pF NPO 0805	8	C45~48,62,63,65,66
2	2-05-0111	TRN TRANSISTOR JFET J111	2	Q6,7
2	2-11-1317	REG LM317 POS ADJUSTABLE REGULATOR	3	U32,37,38
2	2-11-2940	REG LM2940CT-5.0V	1	U31
2	2-13-7812	REG LM78L12 +12V REGULATOR	1	U35
2	2-13-7912	REG LM79L12 -12V REGULATOR	1	U34
2	2-24-0138	IC 6N138 OPTO ISOLATOR	1	U1
2	2-50-4148	DIODE	1	D16
2	2-50-4149	DIODE SIGNAL 1N4148 SMD SOT-23	13	D1~8,11~15
2	2-51-0140	DIODE SCHOTTKY MBRS140T3 1A 40V SMD	2	D9,10
2	2-51-4401	TRANS 2N4401 NPN	5	Q1,3,4,11,12
2	2-51-4403	TRANS 2N4403 PNP	6	Q2,5,8~10,13
2	2-62-0004	IC 74AHC04 HEX INVERTERS	1	U15
2	2-62-0574	IC 74AHC574 OCTAL D FF W/TRI-STATE OUTS SMI	1	U18
2	2-62-1014	IC 74AHCT14 HEX SCHMITT-TRIGGER INVERTER 14-PIN SOP	1	U2
2	2-64-5161	IC 74LVC161 SYNC 4-BIT BINARY COUNTER SOP-16	4	U3,5,17,20
2	2-66-6256	IC DRAM 256K x 16 35nS 40-PIN SOJ	2	U11,12
2	2-67-6256	IC SRAM 32K x 8 15ns 3.3V TSOP-28	1	U4
2	2-69-2416	IC EEPROM SERIAL 16K SOIC-8	1	U39
2	2-69-2880	IC FLASH-ROM 512Kx16 110nS 48-PIN TSOP	1	U14
2	2-70-5206	IC MPU MCF5206E 54MHz 160-PIN QFP	1	U13
2	2-71-0084	IC TL084 QUAD OPAMP SOP-14	3	U6,9,10
2	2-71-3079	IC MC33079 4-OPAMP SOP-14	1	U8
2	2-75-1101	IC CONVERTER ADC 24-BIT AL1101 SOP-16	1	U7
2	2-75-1201	IC CONVERTER DAC 24-BIT AL1201 SOP-16	2	U30,33
2	2-77-0096	IC DSP 1KM/AL3101 28-PIN SOIC	9	U21~ 29
2	2-79-1818	IC CONTROLLER RESET W/OVERRIDE DS1818-10TR +3.3V SOT-23	1	U16
2	2-80-0007	IC FPGA EP1K30QC208-2 208-PIN PQFP	1	U19
2	4-00-0002	JACK DIN 5-PIN MIDI PCB MOUNT 180 W/SHIELD	3	J1,3,4
2	4-02-0007	JACK 1/4 STEREO 7-PIN FEM MINI W/GRND LUG STRAIGHT	9	J5~11,13,14
2	4-14-0116	HEADER DIL 16-PIN 0.1 SHRD	2	J19,20
2	4-14-2601	HEADER DIL 26-PIN 0.1" MALE	1	J15
2	4-14-6000	HEADER DIL 60-PIN 0.1" MALE	1	J17
2	4-15-0010	HEADER DIL 10-PIN 0.1	1	J18
2	4-15-0204	HEADER SIL 4-PIN 3.96mm MALE EXT-LOCKING	1	J16
2	4-15-1800	HEADER SIL 18-PIN 1mm FEM FFC	1	J21
2	5-00-0006	SCREW 4-40X1/2"	1	(U37)
2	5-00-0106	SCREW 4-40X1/2"	2	(U31,32)
2	5-02-0009	HEATSINK	2	(U31,32)

2	5-02-4402	NUT	1	(U37)
2	6-02-0050	SWITCH TACT TL1105T	1	S1
2	7-01-0035	OSCILLATOR 54MHz 3.3V 8-PIN DIP	1	U36
2	9-03-1132	HEATSINK	1	
2	9-40-0272-C	PCB MAIN Q01 Rev C	1	
1	**9-79-0280-A**	**ASSY PCB TOP PANEL LEFT Q01 Rev A**	**1**	**17**
2	1-56-0104	CERAMIC 0.1UF	21	C2~6,8,9,14~22,24~28
2	PT0704402	LED HOLDER (7.5mm)	21	(D12~15,17~19,21,24,25,29,31,37,40,47~49, 55,59,62)
2	0-15-0103	RESISTOR 10K (SMD)	1	R8
2	0-15-0104	RESISTOR 100K (SMD)	8	R27~34
2	0-15-0151	RESISTOR 150O (SMD)	1	R35
2	0-15-0471	RESISTOR 470O (SMD)	1	R36
2	TE10200601	6P CONNECTOR	1	J5
2	TE612000901	9P CONNECTOR	1	J3
2	0-09-0036	POT 5KB DUAL 360 DEG TURN	13	R12~24
2	0-09-0041	POT 10KA DUAL	1	R11
2	0-16-2002	RES 20.0K OHM 1/10W 1% 0805	1	R7
2	0-17-0101	RES CHIP ARRAY 4 x 100 OHM 1/16W 5% ISOLATED c-c=0.8mm	4	R2,3,4,6
2	0-17-0103	RES CHIP ARRAY 4 x 10K OHM 1/16W 5% ISOLATED c-c=0.8mm	2	R25,26
2	0-17-0270	RES CHIP ARRAY 4 X 27 OHM 1/16W 5% ISOLATED c-c=0.8mm SMD	2	R1,5
2	1-08-0222	CAP 22uF ELEC 20% 16V 1.5x4x7mm	5	C1,11,12,13,29
2	1-08-0223	CAP 220 uF 16V ELEC	2	C10,23
2	1-56-0102	CAP 1000PF 5% 100V NPO 0805	1	C7
2	2-51-4401	TRANS NPN 2N4401 40V 1A SOT-23	17	Q1,5,6,12~15,17,19~27
2	2-51-4403	TRANS PNP 2N4403 40V 800mA SOT-23	10	Q2~4,7~11,16,18
2	2-72-0339	IC LM339 QUAD COMPARATOR SMD	3	U5,6,7
2	2-72-4051	IC CD4051 SINGLE 8-CHAN MUX 16-PIN SOIC	4	U1,2,3,4
2	3-02-0028	LED RED T1 CLEAR (NON-DIFFUSED) 4204-10IT	49	D9~21,23~26,29~35,37~42,47~56,58~62,64~ 67
2	3-02-0029	LED GRN T1 CLEAR (NON-DIFFUSED) 4204-10GT	10	D22,27,28,36,43,44,45.46,57,63
2	4-70-0018-A	CABLE DIL RIBBON 60-PIN F-F	1	J2
2	4-70-0019-A	CABLE DIL RIBBON 40-PIN F-F	1	J4
2	6-02-0050	SWITCH TACT TL1105T	47	S1~5,7-48
2	9-40-0280-A	PCB TOP PANEL LEFT Q01 Rev A	1	
1	**9-79-0281-C**	**ASSY PCB TOP PANEL RIGHT Q01 Rev C**	**1**	**39**
2	1-56-0104	CERAMIC 0.1UF	22	C2~5,11~28
2	PT0704402	LED HOLDER (7.5mm)	9	(D3,5.14,15,20,28,31,33,34)
2	0-15-0101	RESISTOR 100O (SMD)	2	R28,29
2	0-15-0102	RESISTOR 1K (SMD)	3	R23,24,25
2	0-09-0036	POT 5KB DUAL 360 DEG TURN	17	R5~21
2	0-15-0100	RES 10 OHM 1/10W 5% 0805	2	R26,27
2	0-15-0101	RES 100 OHM 1/10W 5% 0805	3	R1,2,3
2	0-17-0103	RES CHIP ARRAY 4 x 10K OHM 1/16W 5% ISOLATED c-c=0.8mm	1	R22
2	0-17-0270	RES CHIP ARRAY 4 X 27 OHM 1/16W 5% ISOLATED c-c=0.8mm SMD	1	R4
2	1-08-0222	CAP 22uF ELEC 20% 16V 1.5x4x7mm	4	C1,7,8,9
2	1-08-0223	CAP 220 uF 16V ELEC	2	C6,10
2	2-51-4401	TRANS NPN 2N4401 40V 1A SOT-23	18	Q5~22
2	2-51-4403	TRANS PNP 2N4403 40V 800mA SOT-23	6	Q1~4,23,24
2	2-72-4051	IC CD4051 SINGLE 8-CHAN MUX 16-PIN SOIC	4	U1~4
2	3-02-0028	LED RED T1 CLEAR (NON-DIFFUSED) 4204-10IT	14	D3,5,14,15,17,20~23,256,28,31,33,34
2	3-02-0029	LED GRN T1 CLEAR (NON-DIFFUSED) 4204-10GT	11	D1,2,16,18,24,26,29,30,32,35,36
2	3-02-0030	LED YEL T1 CLEAR (NON-DIFFUSED) 4204-10YT	2	D4,27
2	3-02-0042	LED BLUE T1 DIFFUSED	1	D19
2	4-14-0040	HEADER DIL 40-PIN 0.1" SHRD	1	J1
2	6-00-0010	ENCODER 24-DETENT 12mm VERT-MT 14mm FLAT-THREADED-SHAF	1	ENC1
2	6-02-0050	SWITCH TACT TL1105T	23	21~23
2	9-40-0281-C	PCB, TOP PANEL RIGHT Q01 Rev C	1	

1	**9-96-0082**	**ASSY PITCH AND MOD WHEELS Q01**	**1**	**8**
2	9-03-0145-A	BRACKET PITCH/MOD WHEEL	3	
2	WS1306505	WASHER	1	
2	0-09-0037	POT 5KB SINGLE CONTROL EYELET 18MM SHAFT	3	
2	4-19-0035	CABLE SIL 6-PIN PITCH/MOD WHEEL Q01	1	
2	7-13-0080	TUBING HEATSHRINK 1/16" DIA x 5/8" 300V 80c	2	
2	9-06-0018	SPRING, MOD WHEEL	2	
2	9-06-0030	SPRING PITCH WHEEL	1	
2	9-15-0301-A	WHEEL PITCH & MOD Q01 - REV A	3	
1	**9-96-0096**	**ASSY CABLE AC POWER SWITCH Q01**	**1**	
2	7-13-0001	TUBING HEATSHRINK 5mm DIA x 15mm	2	
2	4-19-0038-B	CABLE SIL 2-PIN 7.92mm HEADER-F	1	
2	6-02-0036	POWER SWITCH	1	
1	**9-96-0305-A**	**ASSY PCB PITCH/MOD WHEEL LED**	**1**	**54**
2	R47016	RESISTOR	1	
2	TE10200602	HEADER	1	
2	3-02-0028	LED RED T1 CLEAR (NON-DIFFUSED) 4204-10IT	9	
2	9-40-0305-A	PCB PITCH/MOD WHEEL LED - REV A	1	

Q01 QC Test Procedures

Items required for test (one each unless otherwise specified):

- Q01 unit with current OS
- IEC power cable
- MIDI cable
- Sustain pedal
- Pair of headphones
- AP Computer w/ cables

Setup and Calibration:

1) Connect IEC power cable from Q01 to power outlet.
2) Connect the MIDI cable from Q01 MIDI OUT to Q01 MIDI IN.
3) Plug sustain pedal into the **expression pedal input** jack on the Q01.
4) Plug the headphones into the headphone output jack of the Q01 (marked with a headphones symbol). Turn **Master Volume** knob (red knob) completely CCW.
5) Power up Q01 while holding down **PAGE <** and **> PAGE** buttons. This brings the Q01 into diagnostic mode. Verify that the text "diagnostic" appears at the very top of the LCD.
6) Using the **> PAGE** button, go to page 3 of the diagnostics (text at top of LCD should read "EXT IN AUDIO TEST" and text at bottom of LCD should read "3 of 3").
7) Press the soft button beneath "whl cali p hi" text at the bottom of the LCD (text at top of LCD should now read "WHEEL CALIBRATION" and the text "whl cali p hi" should now be highlighted).

   Pitch Wheel Calibration

8) Verify that there is an arrow pointing up towards a number, in a box labeled "p." Move pitch wheel "p1" to its top-most position and press the "compare" button. This calibrates the top range of the pitch wheel.
9) Turn the encoder one click CCW. The arrow in box "p" should now be pointing down towards another number. Move pitch wheel "p1" to its bottom-most position and press compare. This calibrates the bottom range of the pitch wheel.

   Mod Wheel 1 Calibration

10) Turn the encoder one click CCW. The arrow should now be pointing up in a box labeled "m1." Movemod wheel "m1" to its topmost position and press "compare."

11) Turn the encoder one click CCW. The arrow should now be pointing down in box “m1.” Move mod wheel “m1” to its bottom-most position and press “compare.”

Mod Wheel 2 Calibration

12) Turn the encoder one click CCW. The arrow should now be pointing up in a box labeled “m2.” Move mod wheel “m2” to its top-most position and press “compare.”
13) Turn the encoder one click CCW. The arrow should now be pointing down in box “m2.” Move mod wheel “m2” to its bottom-most position and press “compare.”

Expression Pedal Calibration

14) Verify that the sustain pedal is plugged into the expression pedal input of the Q01, not the sustain pedal input.
15) Turn the encoder one click CCW. The arrow should now be pointing up in a box labeled “exp.” Press the “compare” button.
16) Turn the encoder one click CCW. The arrow should now be pointing down in box “exp.” Press the sustain pedal and press the “compare” button.

This concludes calibration.

17) Power cycle the Q01 while holding down **PAGE <** and **> PAGE** buttons. Verify that the text “diagnostic” appears at the very top of the LCD.
18) Plug the sustain pedal back into the sustain pedal input of the Q01.

Procedures:

1) Visual Inspection

a) Inspect the front panel for dents and scratches.
b) Make sure that the end caps are properly seated into the chassis. Verify that they also don’ t have any dents any scratches.
c) Verify that all the jacks on the rear of the Q01 have nuts installed.

2) LED Test

a) Verify that the LCD displays the texts “LED TEST” and“ all LEDs are on.”
b) Verify that all the LEDs on the Q01 are indeed on and that the brightness between LEDs of the same type/color is consistent.
c) Turn the encoder one click CCW (translucent white knob to the right of the LCD). Verify that the LCD displays the text “all LEDs are off” and verify that all LEDs turn off.
d) For all the exposed LEDs (the ones protruding through the front panel), verify that they do not have any visible scratches.

3) Button/Sustain Pedal Test
   a) Press the soft button beneath the LCD text "button sust pdl." Verify that the LCD text "button sust pdl" is now highlighted, and that the texts "BTN/SUST PDL TEST" and "press any button" are now displayed in the middle of the LCD.
   b) Test all the buttons on the Q01 front panel EXCEPT for the following: **PAGE <, > PAGE, and** the three soft buttons beneath the LCD (between **PAGE <** and **> PAGE** buttons).
   c) When a button is pressed down, verify that the name of that button is displayed on the LCD, and that the LCD indicates the button is pressed down with the text "button DOWN."
   d) When the button is released, verify that the LCD indicates the button has been released with the text "button UP."
   e) As each button is pressed, make sure that the silk screen on that button is not scratched or misaligned. Also verify that all the buttons have a consistent feel, and that they should generate one "click" when pressed.
   f) Press on the sustain pedal. Verify that the LCD displays "sust pedal button DOWN."
   g) Release the sustain pedal. Verify that the LCD displays "sust pedal button UP."

4) Pot/Expression Pedal/Wheel Test
   a) Press the soft button beneath the LCD text "pot exp pdl." Verify that the LCD text "pot exp pdl" is now highlighted, and that the texts "POT/EXP PDL TEST" and "turn any pot" are displayed in the middle of the LCD.
   b) Test all the pots on the Q01 front panel except the **Master Volume.**
   c) When a pot is turned, verify that the pot' s name is displayed on the LCD and pot indicator moves smoothly. NOTE: If the pot is turned CW, the pot indicator will move from left to right, and the percent value will increase. Conversely, if the pot is turned CCW, the pot indicator will move from right to left, and the percent value will decrease. Also, some pots are more sensitive than others. This is normal and should not be considered a failure (i.e. the **FILTER 1 FREQ** pot is more sensitive than the **FILTER 1 RES** pot).
   d) Also verify that there are no bumps or rough spots felt on the pot knob as it is rotated CW or CCW.
   e) Plug the sustain pedal into the **expression pedal input** jack of the Q01.
   f) Press on the sustain pedal and verify that the LCD displays the text "exp pedal" and the value "0".
   g) Release the sustain pedal and verify that the LCD now displays a value of "16383."
   h) Move pitch wheel **P** up and verify that the LCD shows the text "pitch wheel" and a value of 16383.
   i) Move pitch wheel **P** down and verify that the LCD shows a value of 0.

j) Move modulation wheel **M1** up and verify that the LCD shows the text "mod 1 wheel" and a valueof 16383.
k) Move modulation wheel **M1** down and verify that the LCD shows a value of 0.
l) Repeat steps j) and k) with modulation wheel **M2**.
m) Verify that the "ref" value (displayed above the pot or wheel name) is between 2500 and 3200 (typically it should be around 2800). Note that this value will change slightly as the pots and wheels are tested. This is normal, but the variation should be no more than +/-1%.

5) Keyboard Test
   a) Press the **PAGE >** button once. Verify that the LCD text "keyboard" is now highlighted (at the bottom of the LCD), and that the texts "KEYBOARD TEST" and "press any key" are displayed in the middle of the LCD.
   b) Test every key on the Q01. Verify that the leftmost key has a note number of 36, and that the rightmost key has a note number of 84 (the key' s note number is displayed on the LCD when that key is pressed/released).
   c) As each key is pressed, make sure that the key movement and feel is consistent with all the other keys. Inspect the keys as well for scratches and dents.
   d) When a key is pressed, verify that the note number of that key is displayed on the LCD, and that the LCD indicates the key is pressed with the text "key DOWN."
   e) When the key is released, verify that the LCD indicates the key has been released with the text "key UP."

6) Encoder Test
   a) Press the soft button beneath the LCD text "encoder." Verify that the LCD text "encoder" is now highlighted, and that the texts "ENCODER TEST" and "turn the encoder" are displayed in the middle of the LCD.
   b) Turn the encoder CW. Verify that the LCD displays a positive number that increments as the encoder is turned, and that the arrow is pointing to the right.
   c) Turn the encoder CCW. Verify that the LCD now displays a negative number that decrements as the encoder is turned, and that the arrow is now pointing to the left.

7) MIDI Test
   a) Press the soft button beneath the LCD text "midi." The LCD text "midi" should now be highlighted, and the texts "MIDI LOOP TEST" and "press [compare]" should be displayed in the middle of the LCD.
   b) Press the **COMPARE** button (located below the encoder, to the right of the LCD). Verify that the LCD displays "passed."

8) Audio Output Test
   a) While listening to the headphones, press a key and turn the **Master Volume** knob clockwise until the tone is at a comfortable listening level (this verifies that the **Master Volume** pot is functional). Verify that both the left and right sides of the headphones produce a tone.
   b) Plug the headphones into the Q01 main output left jack. Verify that when a key a pressed, a tone is heard on one side (left side) of the headphones. NOTE: the **Master Volume** knob may require adjustment in order to hear this tone more easily.
   c) Repeat step b) for the Q01 main output right jack, and the Q01 aux output left and right jacks. Note that for the aux outputs, the **Master Volume** knob has no effect.

9) Voice DSP Test
   a) Plug the headphones into the Q01 headphone output jack (**Master Volume** knob may require readjustment to bring headphone output to a comfortable listening level).
   b) Press and hold down a key (do not release). A single tone should be heard from the headphones.
   c) Press and hold a second key (do not release the first key) and verify that a second tone is heard together with the first one.
   d) Press and hold a third key (do not release the first and second key) and verify that a second tone is heard together with the first and second ones.
   e) Repeat step d) five more times, so that a total of eight notes are playing simultaneously, each time verifying that the new note is heard along with the existing notes that are already playing.

10) External Audio Input Test
   a) Press the **PAGE >** button once. Verify that the LCD text "ext in" is now highlighted (at the bottom of the LCD), and that the text "EXT IN AUDIO TEST" is displayed in the middle of the LCD (there should also be a diagram of the audio path).
   b) Connect the AP generator output to the Q01 external input left.
   c) Set the AP generator output to produce a 2Vp, 1KHz sinewave and turn on the output.
   d) Verify that there is a tone from the left side of the headphones
   e) Connect the AP generator output to the Q01 external input right and verify that there is a tone from the right side of the headphones.

11) AP Test
   a) Unplug the headphones from the Q01 headphones jack.
   b) Turn the **Master Volume** knob completely clockwise.
   c) Connect the AP generator outputs A and B to the Q01 external in left and right, respectively.

d) Connect the Q01 main output left and right to the AP analyzer inputs A and B, respectively.
e) Run the AP tests (SNR, THD+N, and frequency response).
f) Repeat steps d) and e) for the Q01 aux outputs left and right.

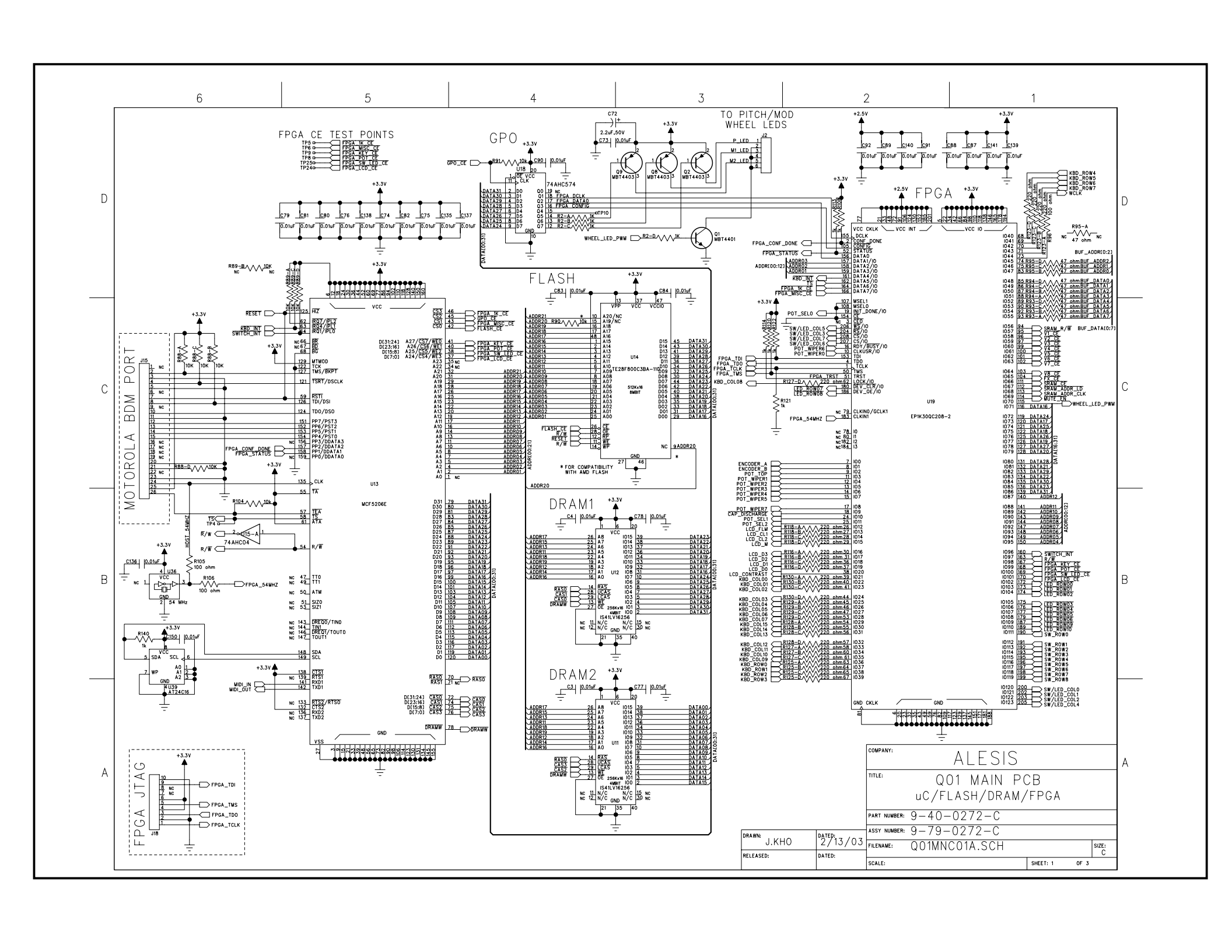
12) Serial EEPROM Test

a) Press the soft button beneath the LCD text "eeprom." The LCD text "eeprom" should now be highlighted, and the texts "EEPROM TEST" and "press [compare] to start EEPROM test" should be displayed in the middle of the LCD.
b) Press the **COMPARE** button to test the serial EEPROM. If the EEPROM is functional, the LCD will display "testing" briefly, followed by "passed." If the EEPROM is not functioning properly, the LCD will display "testing" for several seconds, followed by "failed."

END OF QC TEST PROCEDURES

ALESIS
ION (Q01)

SCHEMATIC
AND
PCB
FILES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FPGA
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74AHC574
74AHC04
EPIK30QC208-2
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AT24C16
MBT4403
MBT4401
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uC/FLASH/DRAM/FPGA
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ASSY NUMBER: 9-79-0272-C
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RELEASED:
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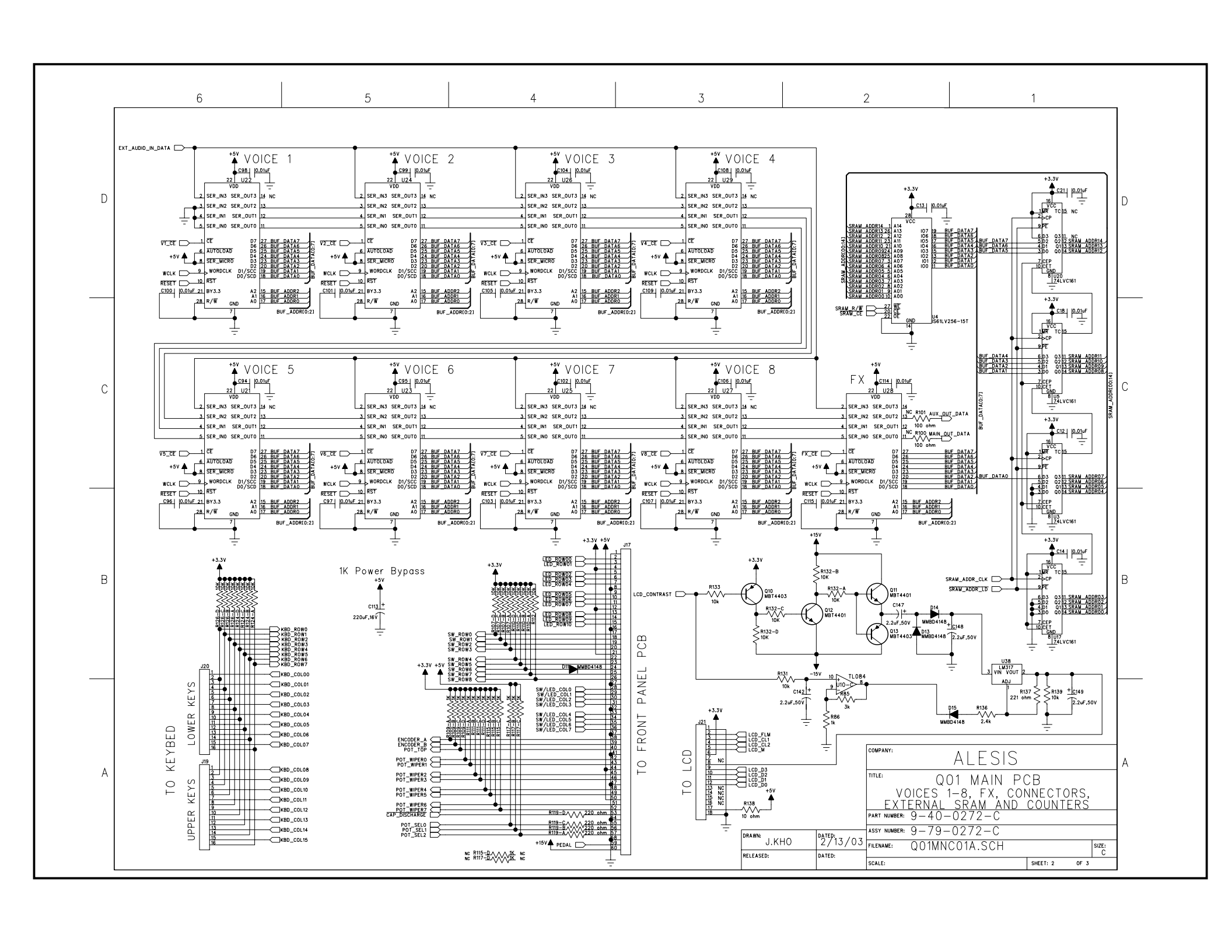
SCALE:
SHEET: 1 OF 3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VOICE 2
VOICE 3
VOICE 4
VOICE 5
VOICE 6
VOICE 7
VOICE 8
FX
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1K Power Bypass
TO KEYBED
LOWER KEYS
UPPER KEYS
TO FRONT PANEL PCB
TO LCD
LCD_CONTRAST
SRAM_ADDR_CLK
SRAM_ADDR_LD
COMPANY: ALESIS
TITLE: Q01 MAIN PCB
VOICES 1-8, FX, CONNECTORS,
EXTERNAL SRAM AND COUNTERS
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ASSY NUMBER: 9-79-0272-C
FILENAME: Q01MNC01A.SCH
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DRAWN: J.KHO
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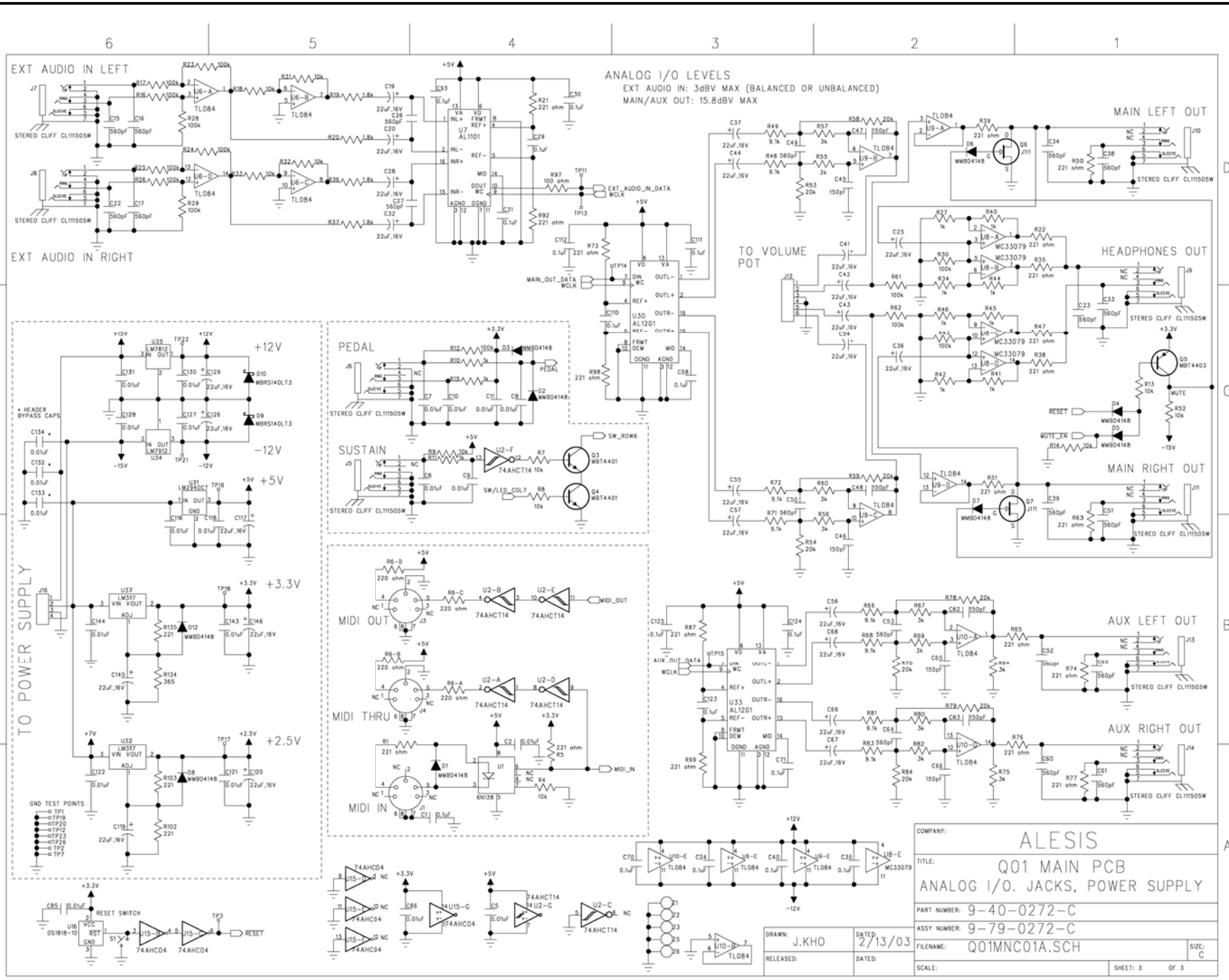
SCALE:
SHEET: 2 OF 3


EXT AUDIO IN LEFT
EXT AUDIO IN RIGHT
STEREO CLIFF CL111505W
TL084
AL1101
ANALOG I/O LEVELS
EXT AUDIO IN: 3dBV MAX (BALANCED OR UNBALANCED)
MAIN/AUX OUT: 15.8dBV MAX
EXT_AUDIO_IN_DATA
WCLK
MAIN_OUT_DATA
TO VOLUME POT
MAIN LEFT OUT
HEADPHONES OUT
MAIN RIGHT OUT
AUX LEFT OUT
AUX RIGHT OUT
AUX_OUT_DATA
MC33079
MMBD4148
MBT4403
PEDAL
SUSTAIN
MIDI OUT
MIDI THRU
MIDI IN
MIDI_OUT
MIDI_IN
SW_ROW6
SW/LED_COL7
TO POWER SUPPLY
+12V
-12V
+5V
+3.3V
+2.5V
+7V
LM7812
LM7912
LM2940CT
LM317
* HEADER BYPASS CAPS
GND TEST POINTS
RESET SWITCH
DS1818-10
74AHC04
74AHCT14
6N138
MUTE
RESET
MUTE_EN
COMPANY: ALESIS
TITLE: Q01 MAIN PCB
ANALOG I/O. JACKS, POWER SUPPLY
PART NUMBER: 9-40-0272-C
ASSY NUMBER: 9-79-0272-C
FILENAME: Q01MNC01A.SCH
SIZE: C
DRAWN: J.KHO
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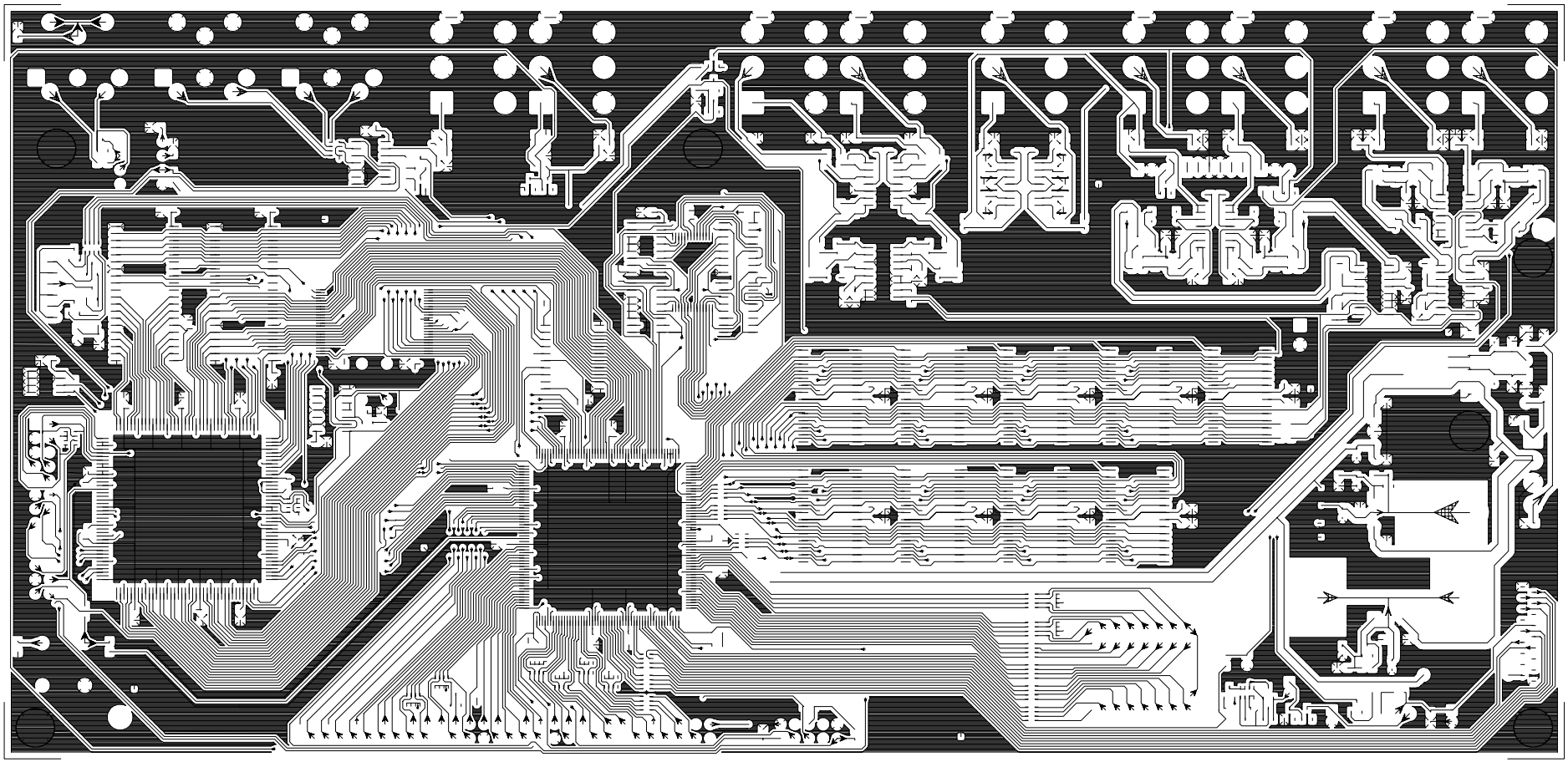
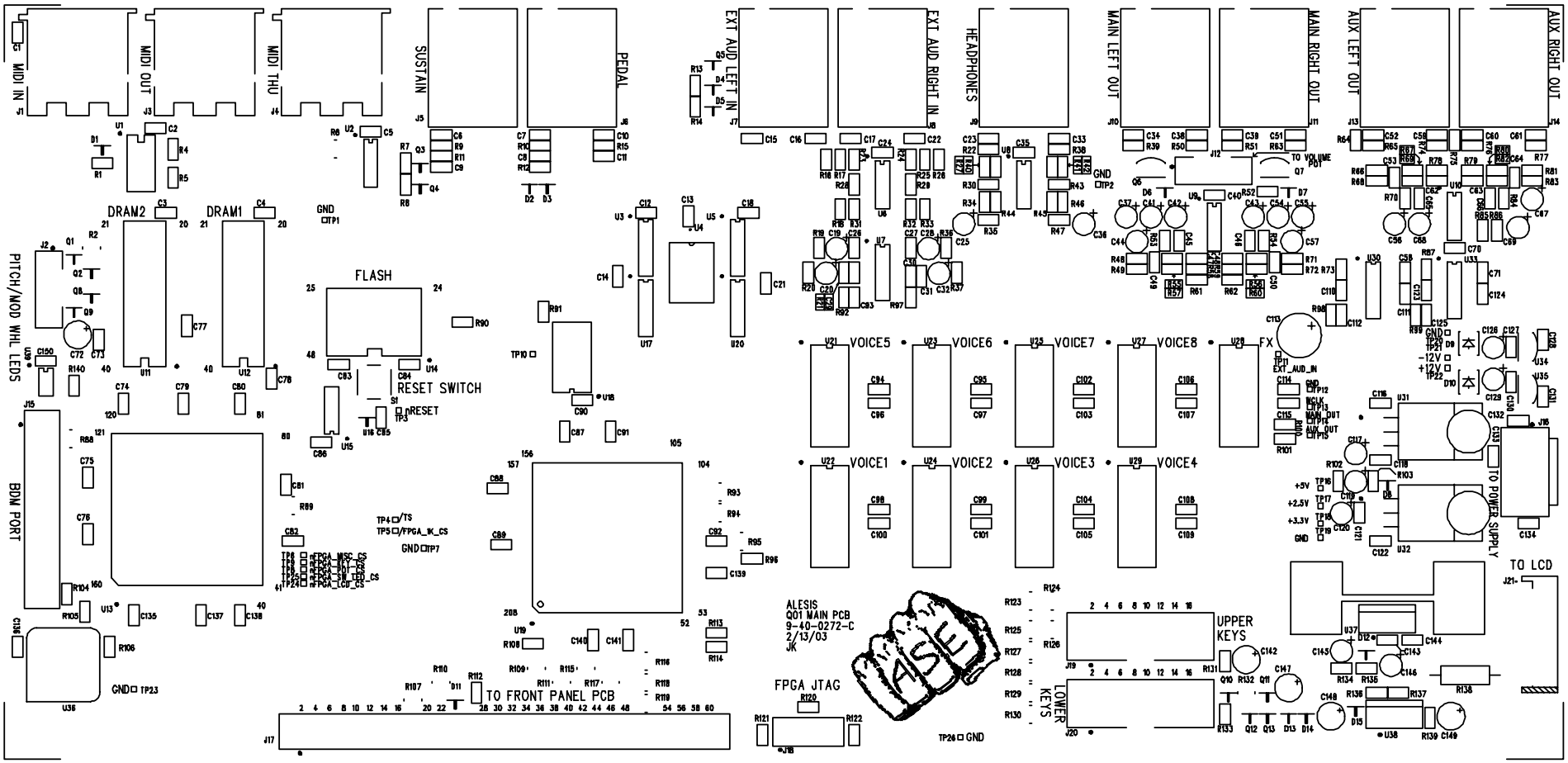
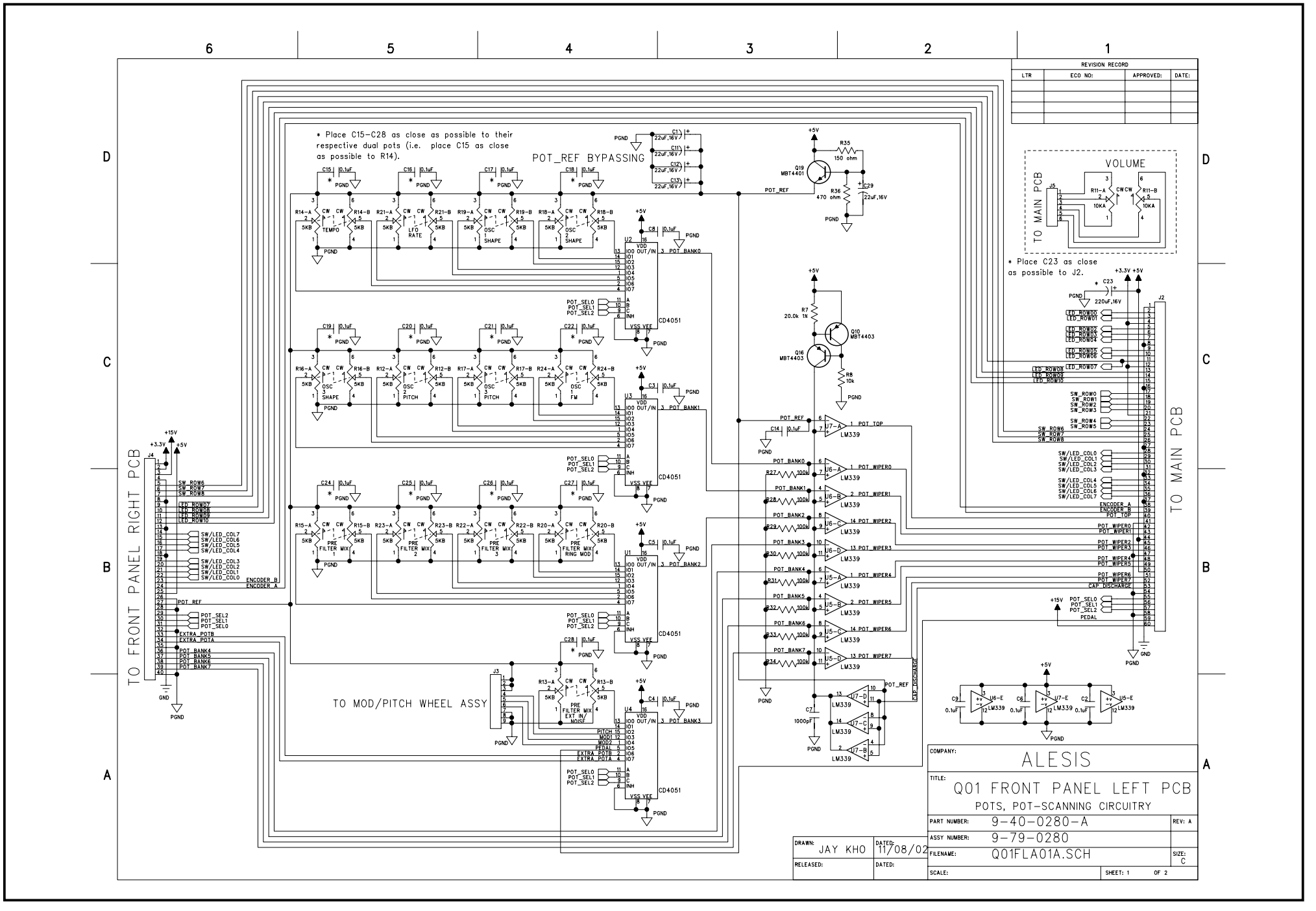


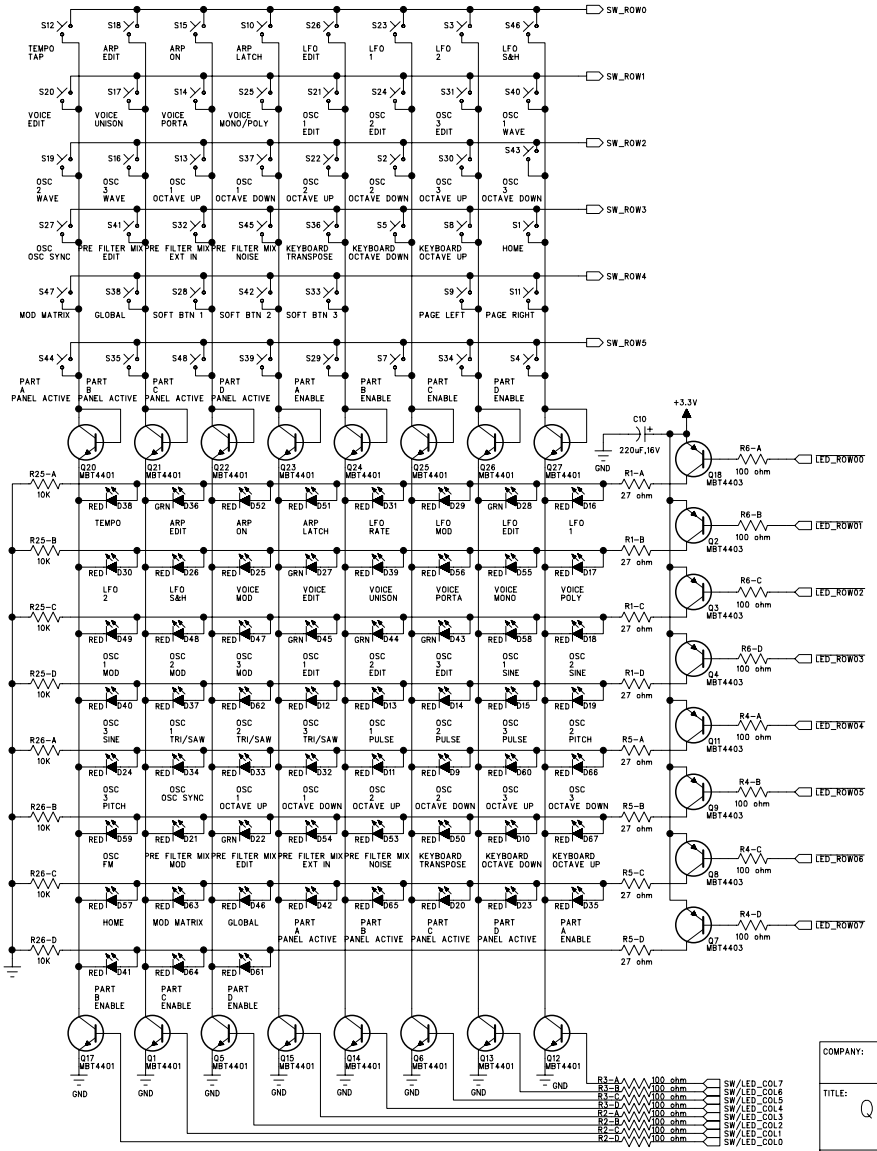
ALESIS 9-40-0272-C "TOPTRACE"

ALTAIR 8-40-0212-C "BOTTRACE"



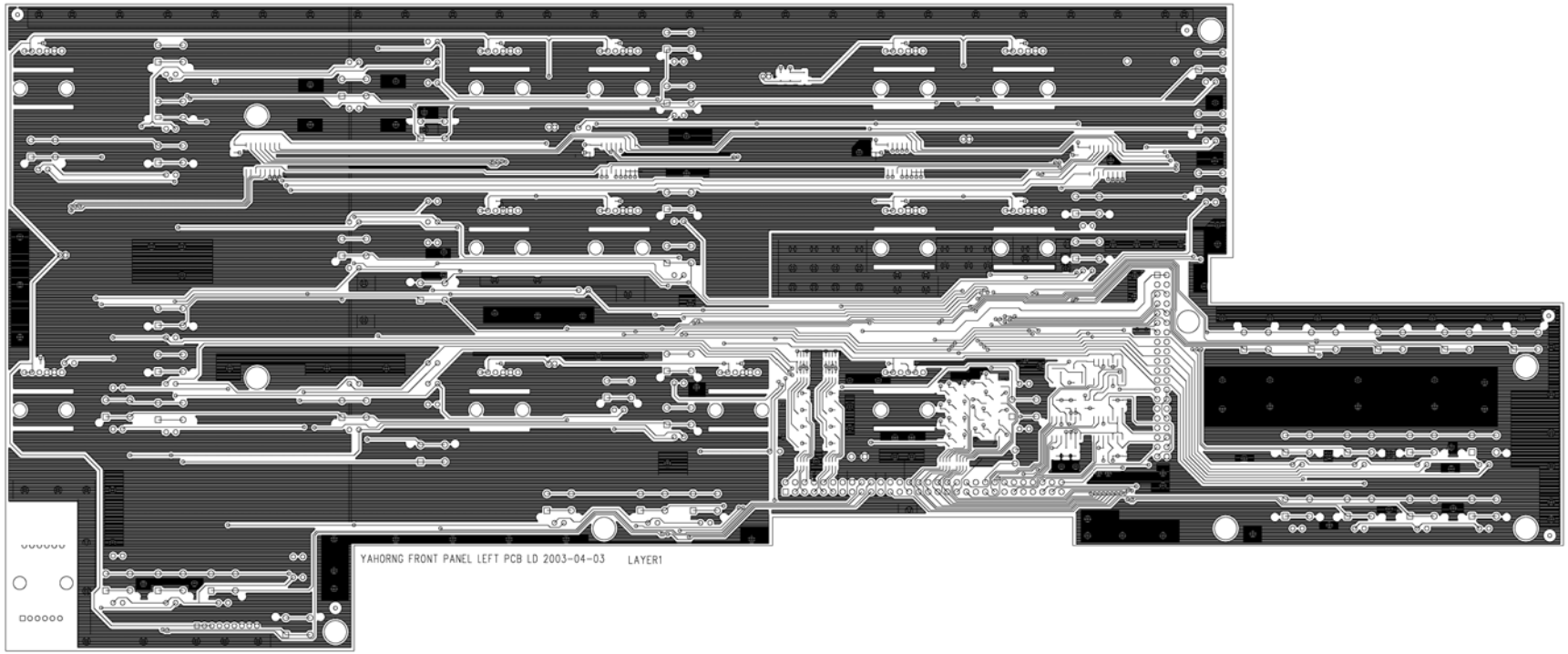
ALESIS 9-40-0272-C "TOPSILK"

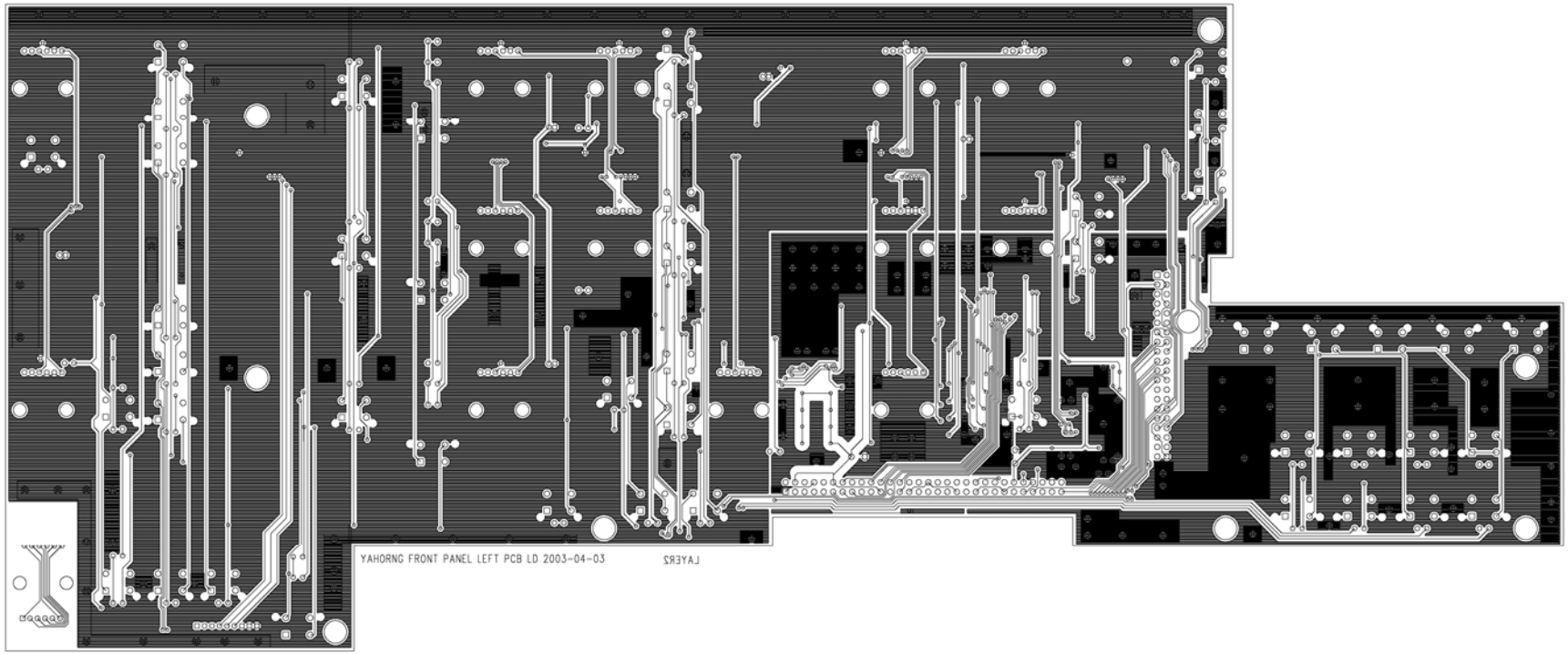

REVISION RECORD
LTR
ECO NO:
APPROVED:
DATE:
* Place C15-C28 as close as possible to their respective dual pots (i.e. place C15 as close as possible to R14).
POT_REF BYPASSING
VOLUME
TO MAIN PCB
* Place C23 as close as possible to J2.
TO FRONT PANEL RIGHT PCB
TO MOD/PITCH WHEEL ASSY
TO MAIN PCB
CD4051
LM339
COMPANY: ALESIS
TITLE: Q01 FRONT PANEL LEFT PCB
POTS, POT-SCANNING CIRCUITRY
PART NUMBER: 9-40-0280-A
REV: A
ASSY NUMBER: 9-79-0280
FILENAME: Q01FLA01A.SCH
SIZE: C
SCALE:
SHEET: 1 OF 2
DRAWN: JAY KHO
DATED: 11/08/02
RELEASED:
DATED:

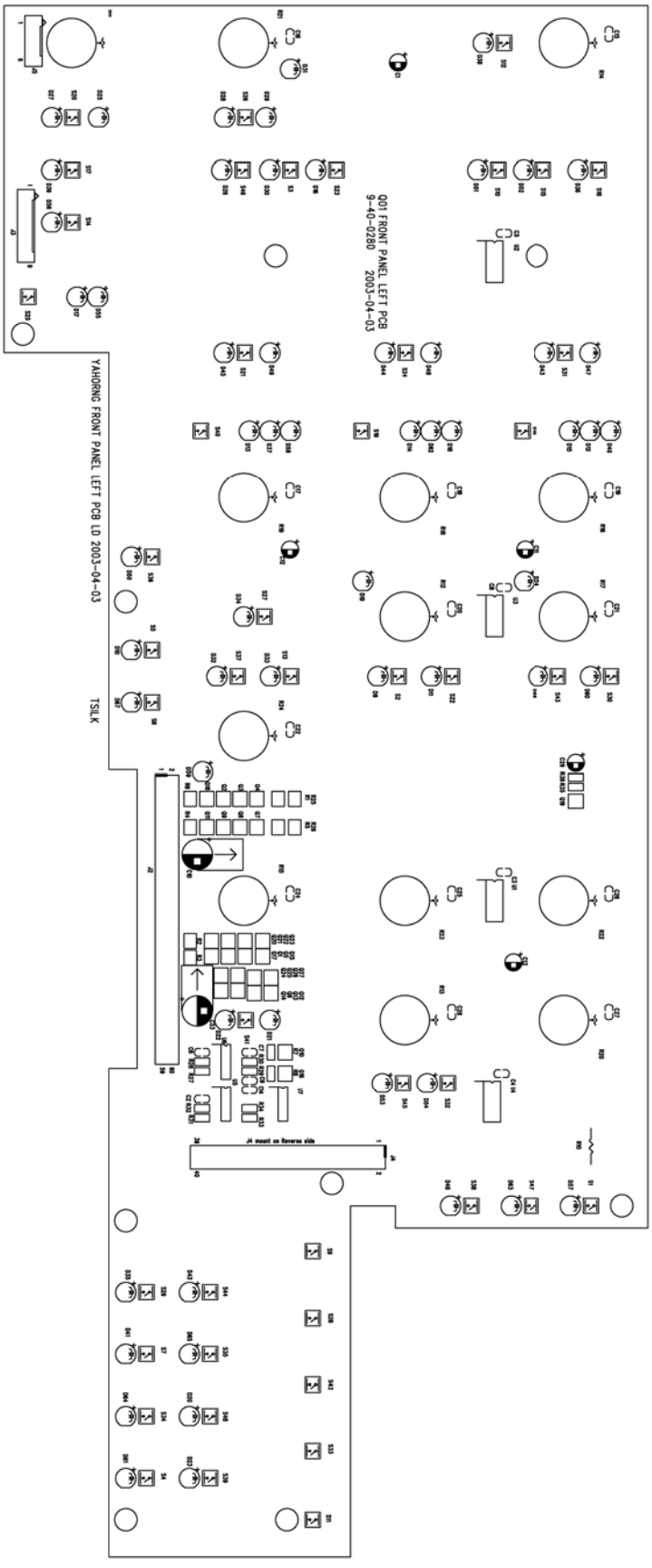


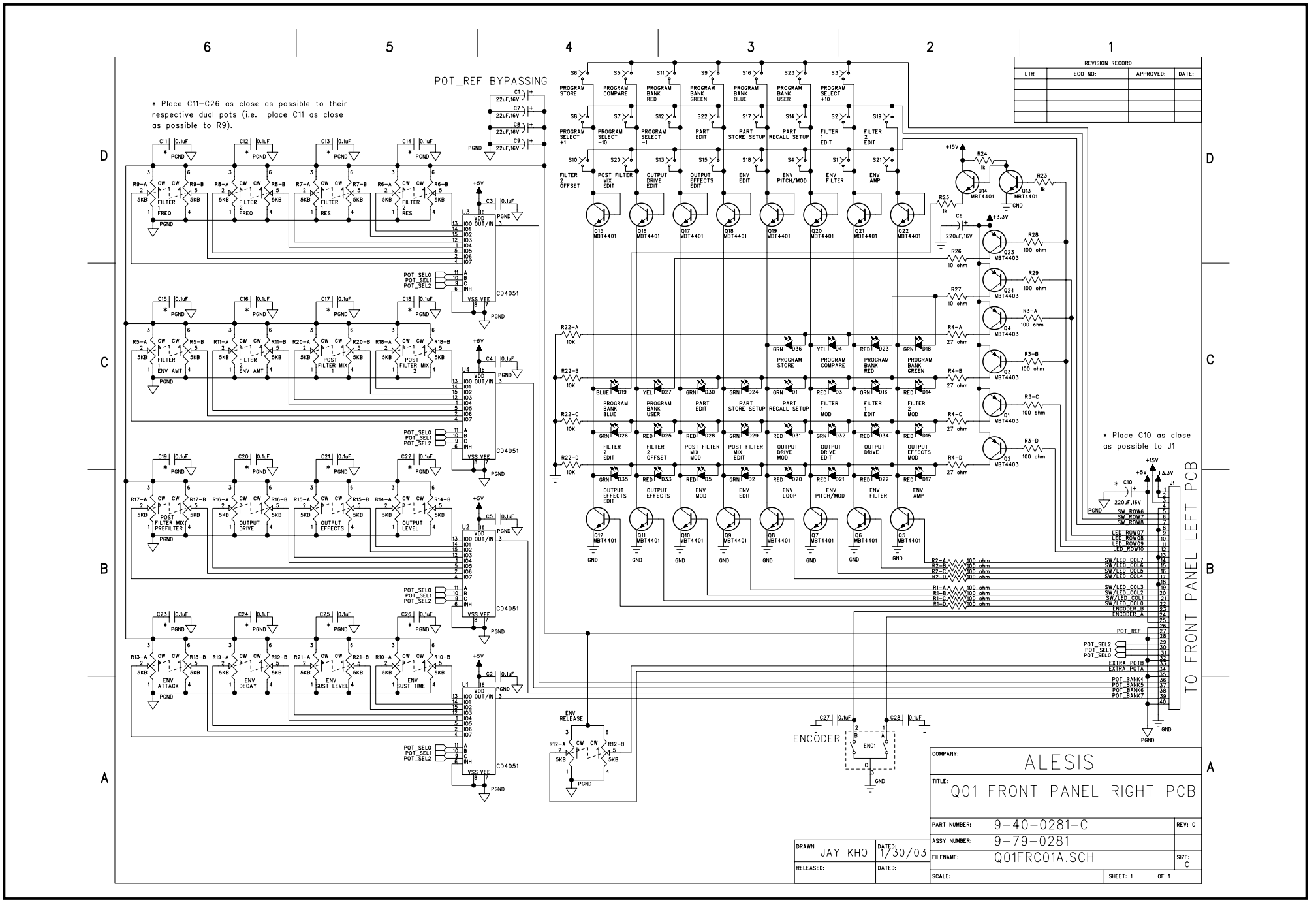
REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

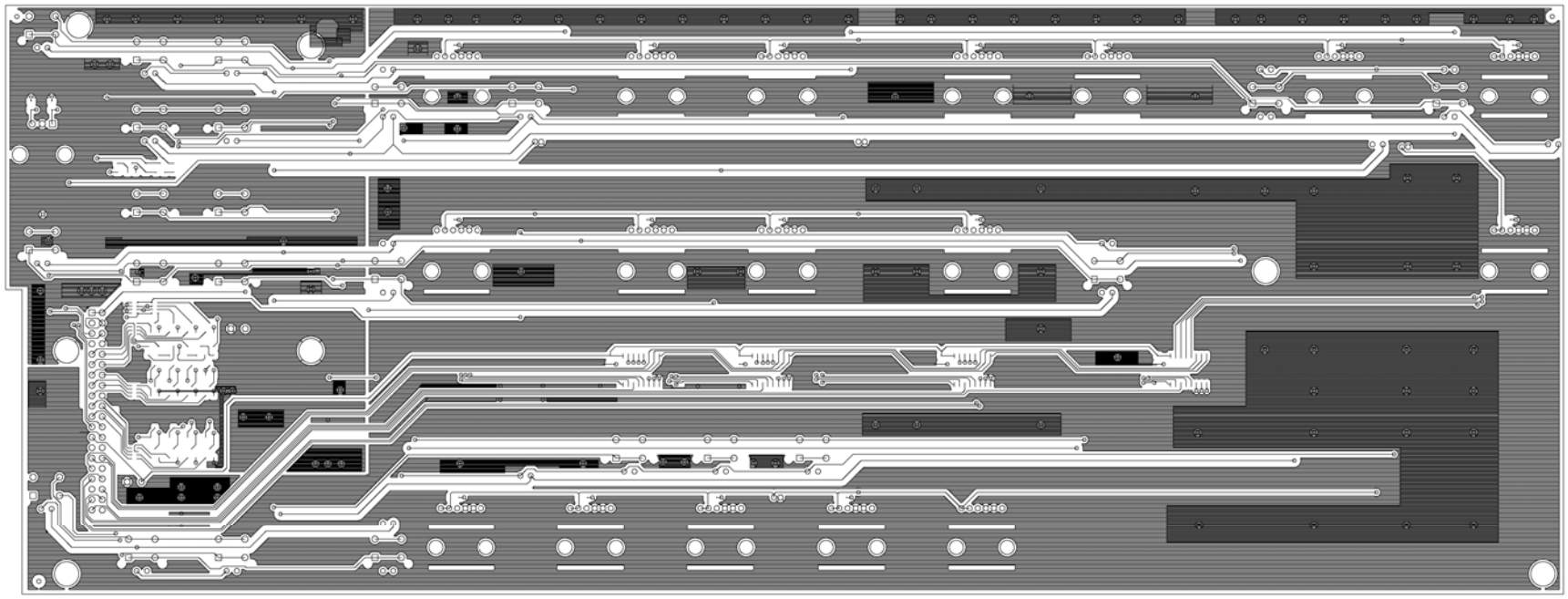
DRAWN: JAY KHO	DATED: 11/08/02	COMPANY: ALESIS	
RELEASED:	DATED:	TITLE: Q01 FRONT PANEL LEFT PCB SWITCHES AND LEDS	
		PART NUMBER: 9-40-0280-A	REV: A
		ASSY NUMBER: 9-79-0280	
		FILENAME: Q01FLA01A.SCH	SIZE: C
		SCALE:	SHEET: 2 OF 2


YAHORNG FRONT PANEL LEFT PCB LD 2003-04-03 LAYER1

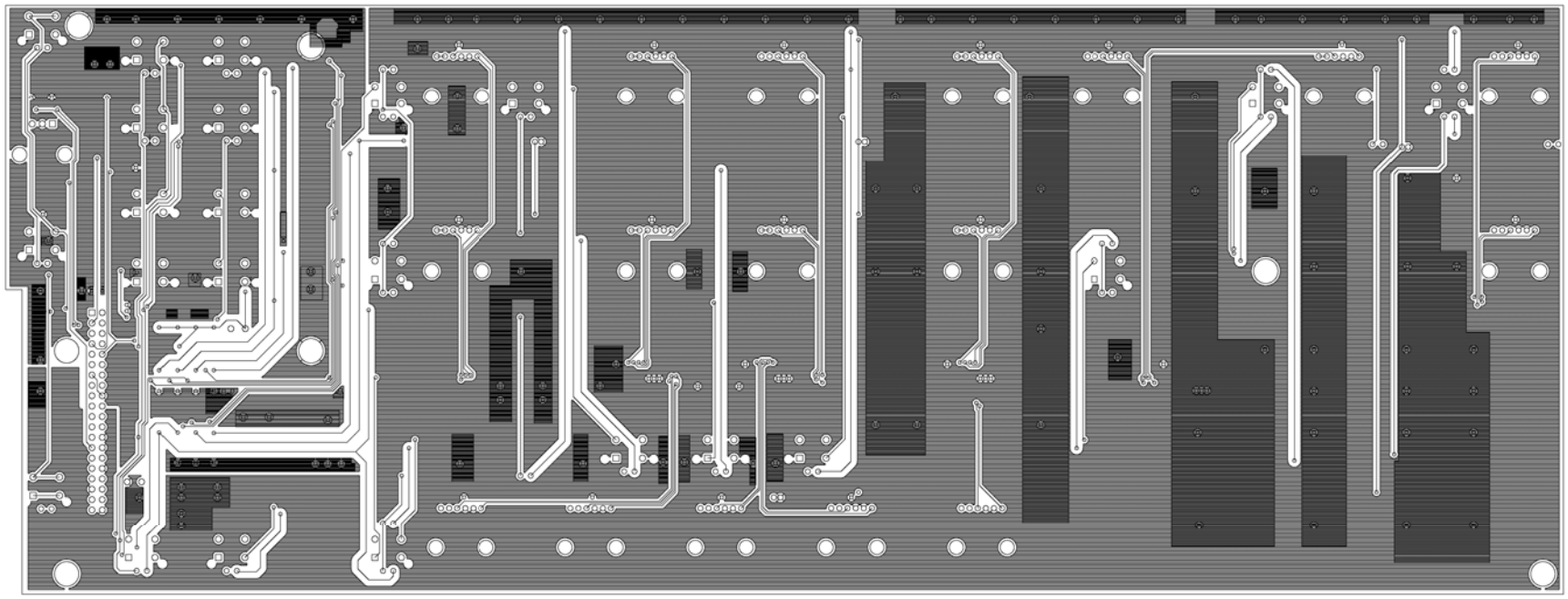

YAHORNG FRONT PANEL LEFT PCB LD 2003-04-03
LAYER2


001 FRONT PANEL LEFT PCB
9-40-0280 2003-04-03
YAHORNG FRONT PANEL LEFT PCB LD 2003-04-03
TSILK
J4 mount on Reverse side

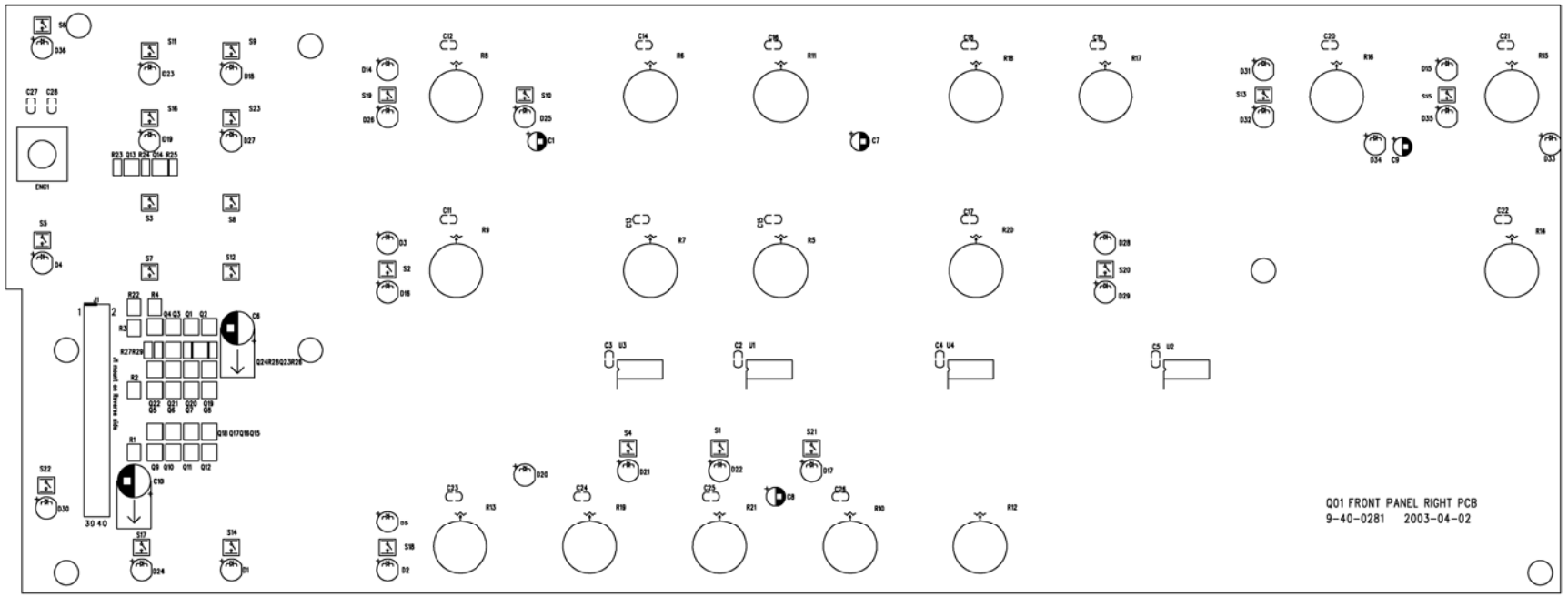

POT_REF BYPASSING
* Place C11–C26 as close as possible to their respective dual pots (i.e. place C11 as close as possible to R9).
* Place C10 as close as possible to J1
TO FRONT PANEL LEFT PCB
ENCODER
REVISION RECORD
LTR
ECO NO:
APPROVED:
DATE:
COMPANY: ALESIS
TITLE: Q01 FRONT PANEL RIGHT PCB
PART NUMBER: 9-40-0281-C
REV: C
ASSY NUMBER: 9-79-0281
FILENAME: Q01FRC01A.SCH
SIZE: C
SCALE:
SHEET: 1 OF 1
DRAWN: JAY KHO
DATED: 1/30/03
RELEASED:
DATED:



YAHORNG FRONT PANEL RIGHT PCB RD 2003-04-02 LAYER1

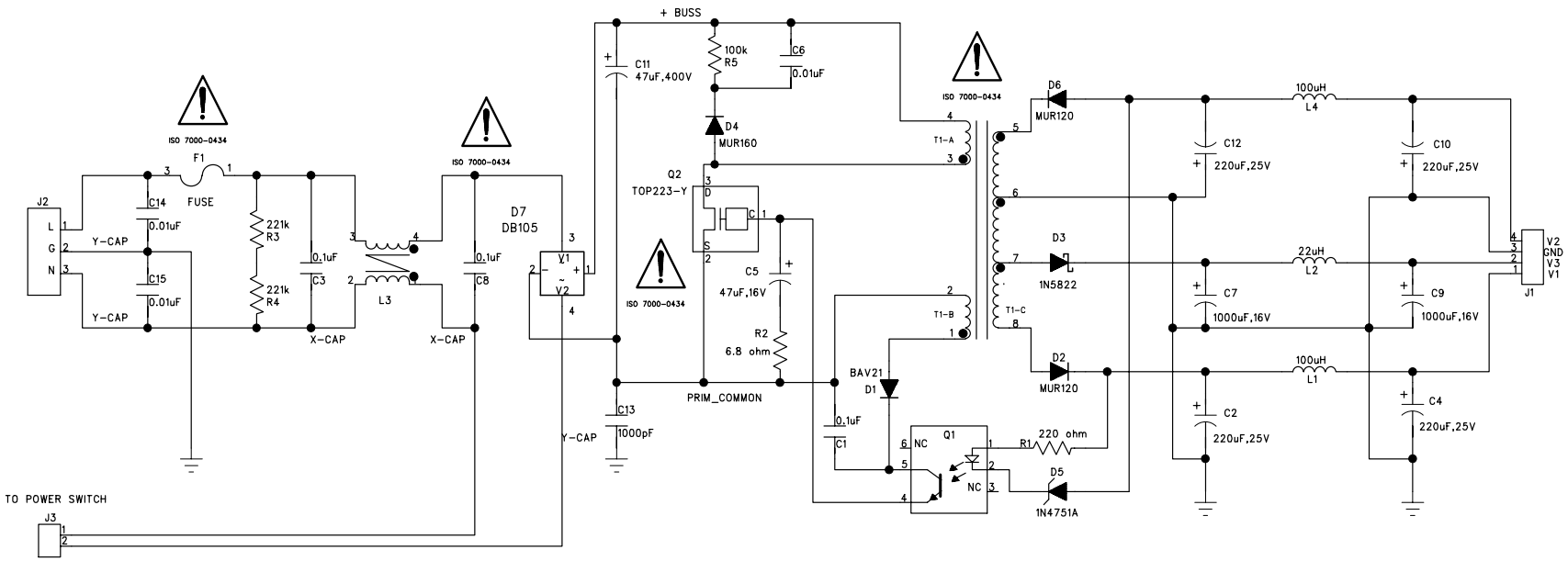


YAHORNG FRONT PANEL RIGHT PCB RD 2003-04-02 LAYER5

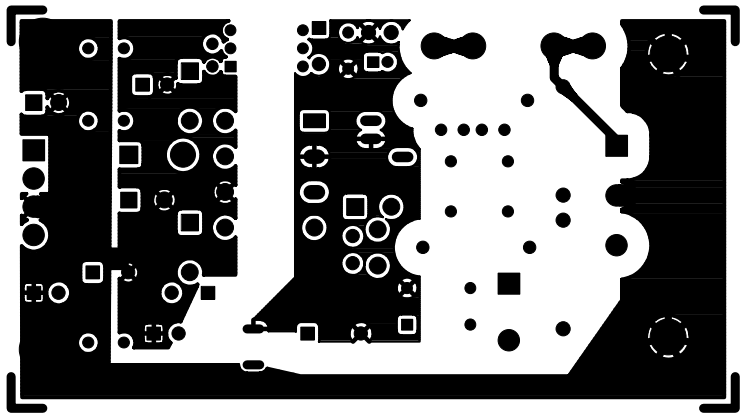


YAHORNG FRONT PANEL RIGHT PCB RD 2003-04-02 TSILK

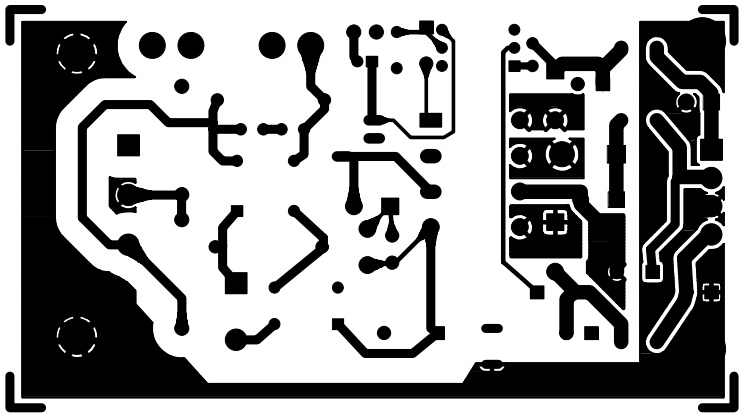
REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:



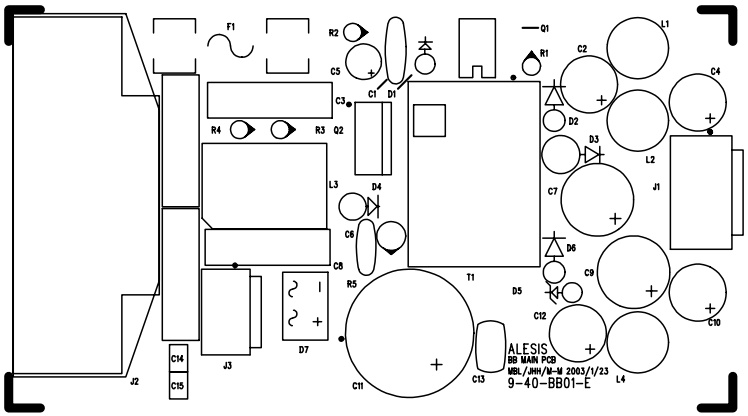
COMPANY:	ALESIS STUDIO ELECTRONICS		
TITLE:	BB SWITCH-MODE POWER SUPPLY		
PART NUMBER:	9-40-BB01-E	REV:	E
ASSY NUMBER:	9-79-BB01		
FILENAME:	BBMNE00a.SCH	SIZE:	B
SCALE:		SHEET:	1 OF 1
DRAWN: MBL	DATED: 1-23-2003		
RELEASED: MBL	DATED: 1-23-2003		



ALESIS 9-40-BB01-E "BOTTRACE"

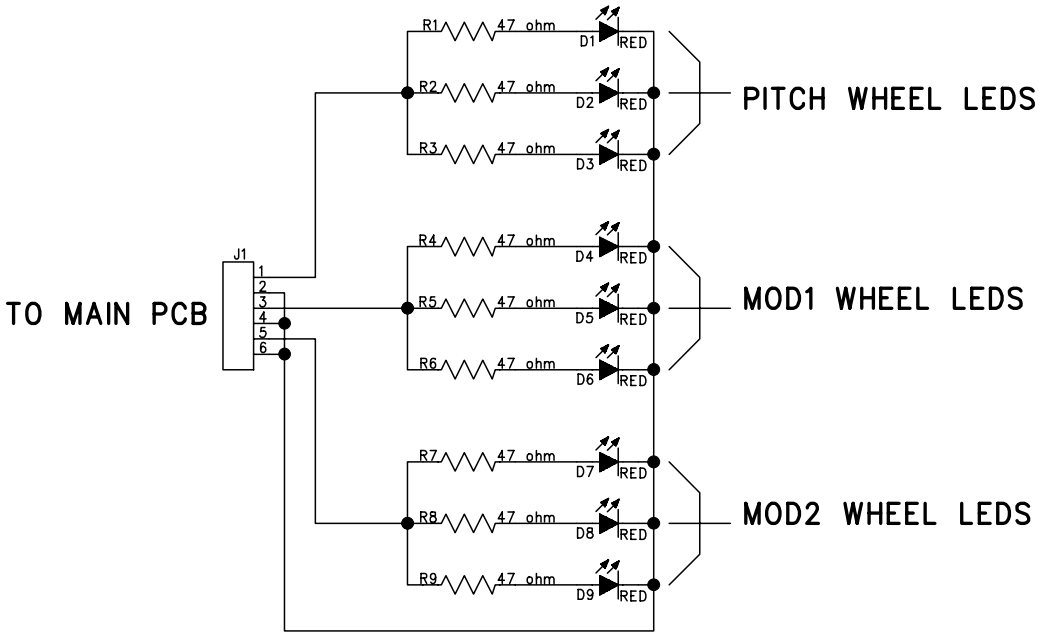


ALESIS 9-40-BB01-E "TOPTRACE"



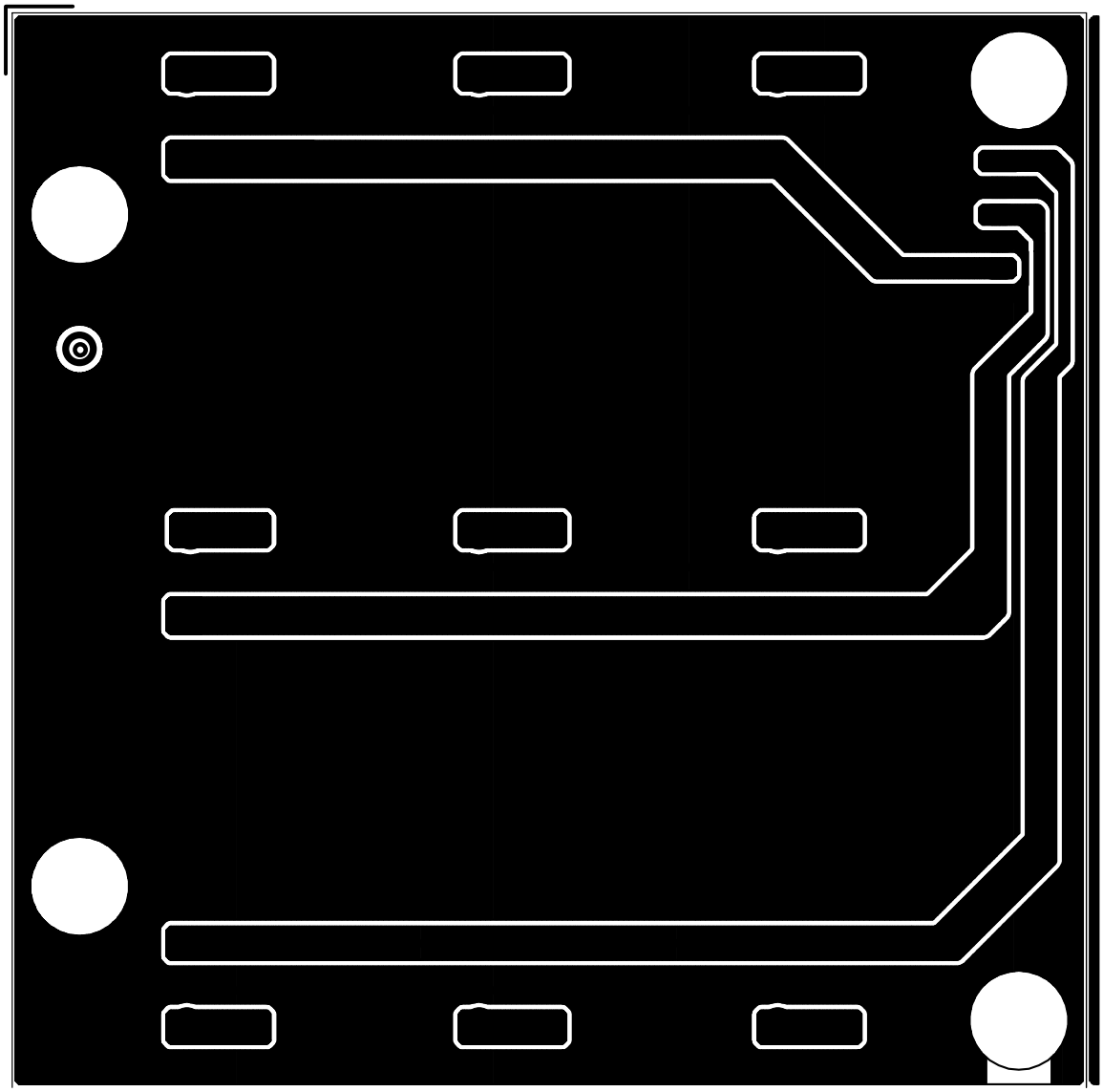
ALESIS 9-40-BB01-E "TOPSILK"

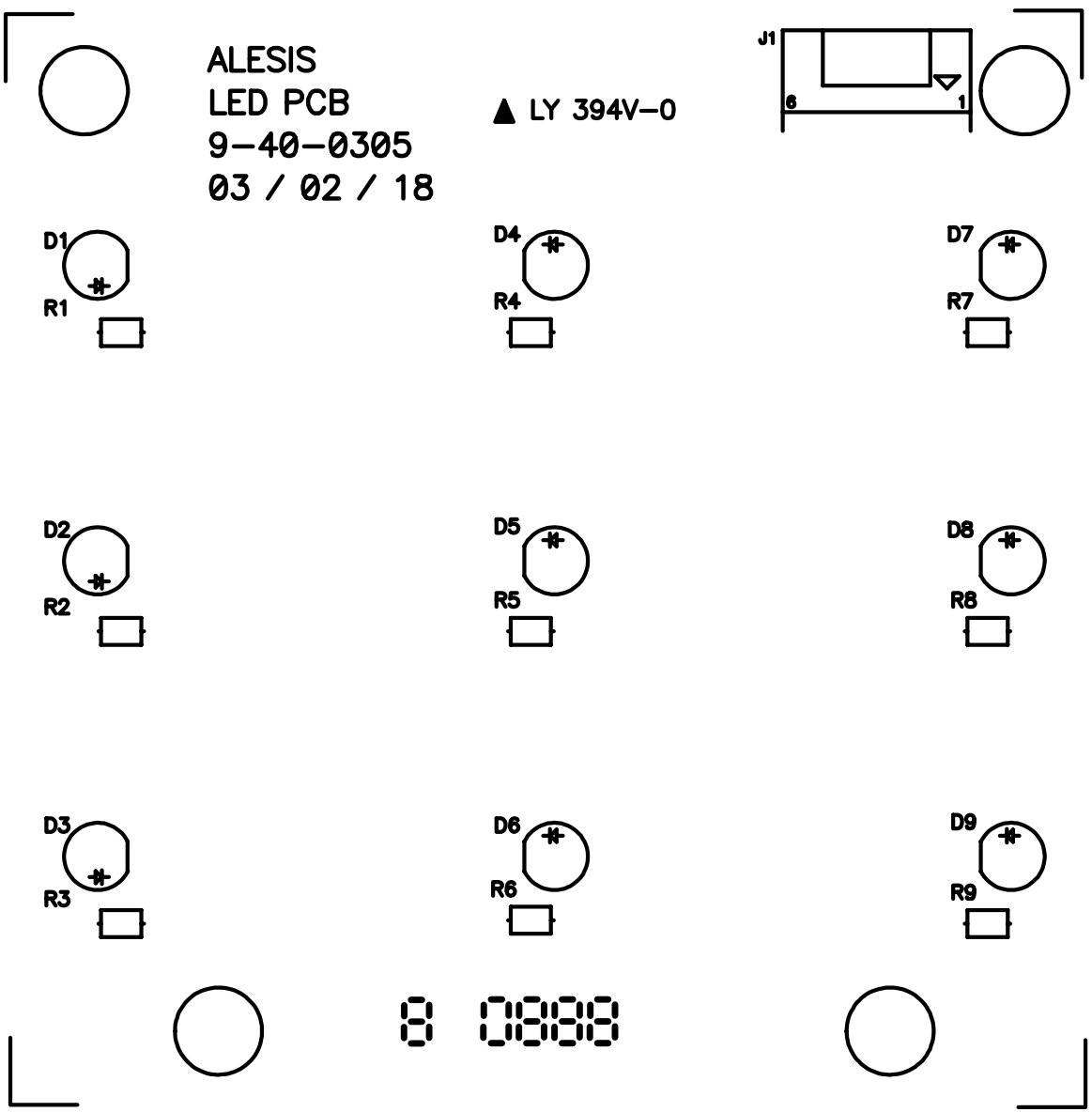
REVISION RECORD			
LTR.	ECO NO:	APPROVED:	DATE:



NOTES:
1) J1 is a staked cable (do not use a header).
2) Resistors are 1/8W thru-hole. If surface-mount resistors or resistor packs facilitate manufacturing, please use those instead (minimum wattage required is only 1/16W).

DRAWN: JK	DATED: 2/12/03	COMPANY: ALESIS	
RELEASED:	DATED:	TITLE: Q01 PITCH/MOD WHEEL LED PCB	
		PART NUMBER: 9-40-0305-A	
		ASSY NUMBER: 9-79-0305-A	
		FILENAME: Q01PMA01A.SCH	SIZE: A
		SCALE:	SHEET: 1 OF: 1




ALESIS
LED PCB
9-40-0305
03 / 02 / 18
LY 394V-0
J1
6
1
D1
R1
D4
R4
D7
R7
D2
R2
D5
R5
D8
R8
D3
R3
D6
R6
D9
R9